

TEMA MONOGRÀFIC

Finding traces, researching silences, analysing
materiality: notes from the United Kingdom
*Trobar rastres, investigar silencis, analitzar la
materialitat: notes des del Regne Unit*

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RESUM

Al llarg del temps, es va produir un canvi subversiu cap al treball interdisciplinari o temàtic en la història de l'educació, que va produir estudis a la materialitat de l'escolaritat, ja sigui per les influències de la postmodernitat, la innovació disciplinària (en geografia, per exemple), els estudis especialitzats (estudis de museus) o la serendipitat inspiradora. El gir material, que mai ha estat una part important de la historiografia de l'educació al Regne Unit, és un intent d'explorar el context material de l'escola i les formes en què es dóna significat als objectes dins d'ella, com s'utilitzen i com es vinculen a xarxes actives heterogènies, en què les persones, els objectes i les rutines estan estretament connectats. A partir de la interrogació sobre els contextos materials,

es va desenvolupar un nou enfocament sobre el treball dels mestres al llarg del temps, els seus recursos i la forma en que els edificis van ser reconfigurats per les demandes canviants d'instrucció i treball. Això ha portat, per exemple, a reconèixer la relativa pobresa de les escoles i la seva influència en l'ensenyament i el pla d'estudis, i en particular en la llarga vida de les tecnologies. Altres avenços en la història visual, espacial, sensorial i emocional de l'educació han permès noves percepcions de la materialitat de l'escolaritat. El gir material en la història de l'educació al Regne Unit sembla ser una àrea continguda d'erudició, ni dominant ni influent, però una àrea de treball que es mostra capaç d'una innovació constant.

PARAULES CLAU: rastres, xarxes, objectes, tecnologies, interdisciplinarietat.

ABSTRACT

A subversive shift into interdisciplinary or thematic work in the history of education, which produced studies in the materiality of schooling, was produced over time either through the influences of postmodernity, disciplinary innovation [in geography, for example], specialist studies [museum studies] or inspirational serendipity. The material turn, which has never been a major part of UK historiography of education, is an attempt to explore the material context of the school and the ways that objects are given meaning within it, how they are used, and how they are linked into heterogeneous active networks, in which people, objects and routines are closely connected. A new focus on the work of teachers over time, their resources, and the way that buildings were reconfigured by changing demands on instruction and work, developed from an interrogation of material contexts. This has, for instance, led to a recognition of relative school poverty and its influence on teaching and the curriculum, and in particular in the long life of technologies. Other developments in the visual, spatial, sensory and the emotional history of education have enabled new insights into the materiality of schooling. The material turn in the history of education in the UK appears to be a contained area of scholarship, neither dominant or influential, but an area of work which shows itself to be capable of constant innovation.

KEY WORDS: traces, networks, objects, technologies, interdisciplinarity.

RESUMEN

A lo largo del tiempo, se produjo un cambio subversivo hacia el trabajo interdisciplinario o temático en la historia de la educación, que produjo estudios en la materialidad de la escolaridad, ya sea por las influencias de la posmodernidad, la innovación disciplinaria (en geografía, por ejemplo), los estudios especializados (estudios de museos)

o la serendipia inspiradora. El giro material, que nunca ha sido una parte importante de la historiografía de la educación en el Reino Unido, es un intento de explorar el contexto material de la escuela y las formas en que se da significado a los objetos dentro de ella, cómo se utilizan y cómo se vinculan en redes activas heterogéneas, en las que las personas, los objetos y las rutinas están estrechamente conectados. A partir de la interrogación acerca de los contextos materiales, se desarrolló un nuevo enfoque sobre el trabajo de los maestros a lo largo del tiempo, sus recursos y la forma en que los edificios fueron reconfigurados por las demandas cambiantes de instrucción y trabajo. Esto ha llevado, por ejemplo, a reconocer la relativa pobreza de las escuelas y su influencia en la enseñanza y el plan de estudios, y en particular en la larga vida de las tecnologías. Otros avances en la historia visual, espacial, sensorial y emocional de la educación han permitido nuevas percepciones de la materialidad de la escolaridad. El giro material en la historia de la educación en el Reino Unido parece ser un área contenida de erudición, ni dominante ni influyente, pero un área de trabajo que se muestra capaz de una innovación constante.

PALABRAS CLAVE: rastros, redes, objetos, tecnologías, interdisciplinariedad.

«Teachers are so often engaged with subjects of instruction, methods of teaching, and other departments of school-work, as to overlook the importance of the school-room as a building, and in consequence bestow upon it little attention. This is a great mistake. A child is educated as much, and not infrequently more, by the circumstances in which it is placed as by any direct efforts on the part of parents or teachers».¹

I. INTRODUCTION

An interest in the material culture of schooling and its organisation is overdue. Within the English/UK history of education, and its near neighbours in the sociology of education, materiality is at most a shadow presence. Most elements of schooling, indeed the very idea of schooling, seem to have been obscured so the actual physical conditions of its existence and operation

1 REYNOLDS, John Stuckey. *Hints on School Building and on the Management and Superintendence of Infant Schools by Teachers, Committees, Patrons and Visitors*. London: English Home and Colonial School Society, 1874 (see section «The School Room. Its influence»).

appear irrelevant to our understanding of the subject. It is not clear why this should be. The subjects, forms and substances of schooling seem to be literally immaterial to the main purposes of historical writing about school systems. They do not appear to offer assistance to the defined problems of education, that is, the battles between church and state, between social orders, between citizens and industry, and the playing out of gender, race and class inequalities.

It is helpful to ask why there is no field of material studies in education in the UK, nor is it a significant sub-disciplinary field of study.² It exists within school architectural studies but, while useful, this is only an element of what was needed in school materiality. For example, a need to focus on objects in schooling, which taken individually and together, constitute the sites of schooling. It does not assume a fixed dichotomy between objects and people, in other words, that there is a life of imagination and action, and there are collections of inanimate objects. Nor does it assume that the technologies and objects of schooling, chained together by routines and action, should remain invisible from inquiry into schools as sites of learning and work. Instead, by drawing attention to the materiality of schooling, that is, the ways that objects are given meaning, how they are used, and how they are linked into heterogeneous active networks, in which people, objects and routines are closely connected

What will be discussed in this essay is the work of two historians, collaboratively or separately, over twenty years, mainly based in Birmingham, in central England.³ It is about our curiosity, problem solving and enthusiasm in finding evidence about materiality as a significant element of schooling, and ways of analysing it. Our research question was simple and constant: «what

2 The materiality of schooling in the United Kingdom did attract the attention of school architects in the late nineteenth and early twentieth century, see in particular ROBSON, Edward Robert *School Architecture* [1874] (Leicester: Leicester University Press, 1972) and CLAY, Felix *Modern School Buildings: Elementary and Secondary* (London: B.T Batsford, 1902). For a general history of school design see: SEABORNE, Malcolm. *The English School. Its Architecture and Organisation (1370-1870)*. Toronto: University of Toronto Press, 1971; SEABORNE, Malcolm; LOWE, Roy. *The English School. Its Architecture and Organisation (1870-1970)*. London: Routledge & Kegan Paul, 1977; BURKE, Catherine; GROSVENOR, Ian. *School*. London: Reaktion, 2008).

3 There is no intention to place ourselves in a prime position here but only to explain why our work became the only UK source for a material history approach in the UK. It is not possible to explain why this should be. The benefit of taking our work as a focus, is that we can try to explain how it was developed and document our journey over two decades.

is going on here?». Only later did we try to explain how different objects and routines fitted together, were superseded and even sedimented within school. In narrating the journey, we identify key influences which have shaped our work and reference other important texts produced by colleagues in the field.

Using Harold Silver's statement that «It is difficult to believe that historians have made almost no attempt to reconstruct the classroom, the culture of the classroom, the social relations of the classroom»,⁴ as the flag, an appeal went out, in 1994, to historians known to be working in classroom or related research to «a working conference about research in progress» in Birmingham, UK. The conference was targeted at the silence about classrooms, and the difficulty in using previous examples of classroom histories, and the fact that it was not constructed as a meeting against any dominant model. The meeting had to find itself through the process of discussion, report and works in progress. It was exploratory in form, including, for example, working within different educational settings, including a reconstructed Victorian classroom.⁵ This was described later in a paper, part of an unsuccessful application for funding: «By the end of the meeting, and consequent seminars in following years in Toronto and Rotterdam, it was clear that there was a direction, a common interest, indeed an explosion of interest, but that this unity of interest was not theoretically bound. There was a pluralism of approach so that an interest in the problems of using images was allied to a concern for images of classrooms; the ways of understanding documents use was united with an exploration of past pedagogy; and an interest in the silences about experience from primary sources was combined with the outside classroom influences which shaped them. Indeed the practical success of the meetings was partly managed through the form they took; the speculative nature of the meeting was matched by experiment with its form. Evidence and discussion, the pedagogical tools of the group, were bound by a shift from paper delivery to workshops on image interpretation, a shift of place from one type of classroom to another, the use of artefacts and so on. So that the questions about classrooms, space and

4 SILVER, Harold. «Knowing and not Knowing in the History of Education», *History of Education*, 21, 1 (1992), p. 105.

5 International conference «Silences and Images. The Social History of the Classroom» (Birmingham, July 1995) and conferences «Silences and Images» (Toronto Sept. 1996) and «Silences and Images» (Rotterdam/ Kortrijk, August 1998).

pedagogy were echoed and enriched by the deliberate shifts in style and place by the seminar itself».⁶

The initial questions about a curriculum mediated by particular spaces or ordered routines, were amplified by the move to new places and new orderings of people, spaces and relations. The ulterior aim of the seminar, to offer an opportunity for cross – germination and collective work between disciplines and nations, was definitely aided by the shifts in its form and in locale.⁷ If innovations were made [or circulated] during the meetings, they were in the incorporation of the idea of textual silences and the use of images as evidence with the consequential problems of analysis. These seminars were influential upon us both, and our consequent eclectic but driven approach was expressed in workshops, special seminars and edited publications, and sustained in European contexts, especially in the European Conference of Educational Research, Network 17 Histories of Education (since its foundation at Lahti in 1999). In addition, the discovery of key texts, usually drawn from specialist studies in a variety of fields, and opportune museum visits, proved helpful in this rather opportunistic and serendipitous field of work. In both cases, it was a change of direction for us in our work. For Lawn, working in historical sociology, there was a recognition that the classroom and school had become a backdrop to key events or changes in recent work, and not as «significant» in itself. In earlier research, on factories and offices and an early essay, *Educational Worker*, there was a focus on the controlling technologies of teaching.⁸ This emergent idea of the labour process of teacher's work had a sense of the actual contexts of work, and the difficulties in understanding it, in the past and the present. For Grosvenor, it marked a shift from documenting racialised policies and practices in urban schools to first, trying to understand how children actually experienced such policies and practices which rendered them as objects in a system and, second, to explore the potential that visual evidence might offer in terms of

6 LAWN, Martin; GROSVENOR, Ian. «Imagining a Project: Networks, Discourses and Spaces: Towards a New Archaeology of Urban Education», *Paedagogica Historica*, 35, 2 (1999), p. 381-393.

7 No explanation, treated within one site or view of the field, could be expected to prevail so «English» ways of writing and explanation had to face «European mainland» traditions and dominant «American» explanations had to face contrasting conceptual structures.

8 LAWN, Martin; OZGA, Jennifer. «The Educational Worker», OZGA, Jennifer (Ed.). *Schoolwork: an introduction to the Labour Process in Teaching*. Buckingham: Open University Press, 1987 [reprinted in: «¿Trabajadores de la enseñanza?: Nueva valoración de los profesores», *Revista de Educación*, n. 285 (1988), p. 191-215].

insights into how the lives of children and their teachers were shaped by the materiality of school.⁹

It is hard to describe the kinds and range of questions which intrigued us. For example, an essay on what the American GI carried¹⁰ turned into a question about what teachers carried in school? What was in their pockets and bags which were necessary to teach with? This could include teaching tools (viz chalk, a pen, knives, felt pens) and classroom aids (viz tissues, – and necessary implements, such as keys). It could include keepsakes, tokens, letters – bringing luck etc. It could include badges of status – books, plans and timetables and registers. Objects had to be chosen to cope with teaching emergencies. This led us back into earlier classrooms, often designed with limited storage space – usually the teacher's desk itself and a cupboard [standard size and issue]. As this time, what did teachers need to carry? Was everything there? In later classrooms, what was included in the classroom for storage and use? What was needed for multi-classroom use [travelling between classrooms] and new ways of teaching [work cards). Observing a teacher locking up a school at length made us think about the role of keys in school, and designing for security and observation. Sitting with other historians in a museum's reconstructed classroom was both playful and useful «It is not uncommon in local museums to find reconstructed classrooms of the past, especially the late Victorian elementary classroom. Rows of uniform seating, slates, a blackboard, a high teacher's desk, a globe and a framed picture or two constitute the classroom. Yet there is a silence in that elementary classroom.... What was the lived reality of the teacher's work, in and around that classroom? Yet the classrooms of the past are not easily reconstructed and re-lived: the technology of the classroom appears discernible but this is an illusion».¹¹

Questions and insights came from all, but especially the Dutch School Museum director, Jaap ter Linden Firstly, was it accurate, and secondly, what was its ordering?

9 See, for example: GROSVENOR, Ian. «“Seen but not heard”: researching past city childhoods», *Paedagogica Historica*, 43, 3 (2007), p. 405-429; GROSVENOR, Ian. «The School Album: issues, histories and inequalities», *Educació i Història: Revista d'Història de l'Educació*, n. 15 (2010), p. 149-164.

10 O'BRIEN, Tim. *The Things They Carried*. London: Collins, 1990.

11 LAWN, Martin. «Encouraging License and Insolence in the Classroom: Imagining a Pedagogic Shift», *Curriculum Studies*, vol. 3, n. 3 (1995), p. 245-261.

A development of this idea two years later appeared as «To see the classroom, it is necessary to see it as a hardware and a software; it is the material structure (spaces, walls, furniture, tools), working procedures and a series of ideas and knowledge systems. The classroom is the integration of artefacts and rules and teachers».¹²

In the summer of 1998, we organised a workshop at ISCHE Kortrijk (with Kate Rousmaniere) exploring an urban school, built in the nineteenth century, through a set of images (plans, photographs, recordings etc). This workshop was developed from a number of visits to a large Birmingham primary school (built in 1881) and the series of three international seminars exploring the idea of silences and images in understanding education¹³. One of the sessions involved the analysis of a well-known image of a science educator and a model lesson. A most interesting set of comments was made by ter Linden concerning the lighting, number of students and doors in the image, showing that the image was, in a sense, counterfeit. The use of images, as historical records, suddenly became problematic. Seen initially as a question of assiduous work in archives, it added parallel questions: Why was the image taken? How was it organised? What was it intended to show?¹⁴ These questions have continued to stimulate research on the connections between the visual and the material.¹⁵

2. SCHOOL STUDY

Trying to recover the «reality» of a school as a space over time was the task we set ourselves. Again through different media, interviews, photographic analyses and guided tours we asked again «what had happened here?». The approach we took was experimental. The school, our «case study» site, had been in continuing operation since 1881, the first plan dates from 1880 and

12 LAWN, Martin. «Classrooms / Technologies», NILSSON, Ingrid; LUNDAHL, Lisbeth (Eds.). *Teachers, Curriculum and Policy* Umeå: University of Umeå Press, 1997.

13 GROSVENOR, Ian; LAWN, Martin; ROUSMANIERE, Kate. *Silences and Images. The Social History of the Classroom*. Peter Lang: New York, 1999.

14 GROSVENOR, Ian. «On Visualising Past Classrooms: Photographs and the History of Education», GROSVENOR, Ian; LAWN, Martin; ROUSMANIERE, Kate (Eds.). *Silences and Images. The Social History of the Classroom*. New York: Peter Lang, 1999, p. 83-104.

15 See, for example, BURKE, Catherine; GROSVENOR, Ian. «The progressive image in the history of education: stories of two schools», *Visual Studies*, 22, 2 (2007), p. 155-168. For an overview of using and images and film as objects to think with in histories of education see: DUSSEL, Inés; PRIEM, Karin. «The visual in histories of education: a reappraisal», *Paedagogica Historica*, 53, 6 (2007), p. 641-649.

the second from the 1960s. The differences in the plans of the school raise the question 'what happened in this space over time?' The normal approach taken by an historian of education to such a question would be to answer it through a narrative using school plans, minute books, school log books and inspection reports. This construction would tend to view the question as approachable only through the historical documents generated over time and maybe sensitive to the problem of inference and to the problem of answering a question not addressed in the documents themselves. However the question itself is not a usual one for historians: the problem of space over time would be replaced by «acceptable» substitutes, for example, the relation between the school and its local community, the history of curriculum change, the influence of the church over the school, the relations between the school and local government and so forth. The idea of space is likely to be left to geographers or possibly the rare breed of architectural historians interested in form and function. The blurred and indistinct nature of space to an historian paradoxically is also a too grounded and realistic version. The document to be studied is too, too solid. The school occupies a sizable place and it is built in solid materials, for functions and with ideas that make it both opaque and all too visible to the historian, this is a paradox. We studied the school as if its function, design and operations were unclear, and tried to do this over time.

Studying the school as a space over time, we began to take as many photographs as possible of our journey around the school (imagine a warren of corridors, old doorways, new passages, a lonely tree) and interviewed long serving teachers about the working of the school and about changes over time. These were the basis for the production of a new historical record of the school, by creating new data sources and by integrating them with existing, archival sources [architects plans, local photographs]. About three hundred photographs were taken in and around the school building in two ways. First, we chose to take detailed photographs of wall markings, building artefacts, cupboards, staircases, seating, doorways, windows, doors and locks, shelving and corridors; secondly, photographs were taken to illustrate a series of recollections and tours through the school by a senior teacher. He identified where and how his working environment had changed. A second teacher, who was asked to record how they engaged with the school, as a designed space, on a daily basis, produced another set of images. A final set of images were produced by eleven year old pupils who were asked to record how they engaged with, and inhabited the school as a designed space. In addition, a copy

of the original school building plans (nine detailed architectural drawings and elevations) dated 1880 were brought into the school and displayed.¹⁶

In 2001, we recognised that, in the UK, school materials did not always arrive in the UK school rationally, through the local, democratic authority, but often through gifts, patronage or appeals: «schools were set up with sufficient resources to operate but they did not have the funds themselves to renew or replace these resources. This was dependent upon the decisions of the city council and officers. In these circumstances, schools and their teachers had to preserve, restore and barter teaching aids, especially the kind of reproductive aids found in the roof space».¹⁷

The material culture of the school often was a «poor culture». This recognition came dramatically when talking to a senior teacher in this veteran school, when he was asked, partly as a joke, «where was the epidiascope now kept?». Without hesitation, he said that above the boy's toilets, there was a room with materials in it. The new headteacher said «What room?». Taking a ladder, it was possible to enter a space, with gaslights [although cut off] and a gothic window. In this space, directly above the headteachers room, there was a series of redundant teaching technologies, lying neatly together: an old computer, hi-fi speakers, an old radio, a gestetner printer etc. It seemed to us that in a school without capital or income, everything had to be preserved, in case it could be used again or a check was made on gifted technologies. Technologies came and went, although not at the speed often assumed, the epidiascope continued to exist in the school decades after its introduction.

The school continued to raise new subjects of study for us, in their content and methodology. Walking around the school revealed questions of time and space. Standing in the current school entrance hall, the size of a classroom, a senior teacher said the following: «When I came here first of all, this doorway was here, the male toilet was there ... It was just a male toilet, a small tiny entrance hall and a glass conservatory with plants in just out there. All that's been knocked down and this entrance hall was built and this staircase was always here but the female staff toilets are there now, there was a corridor through there and the stockroom was there and a cloakroom so actually we

16 See GROSVENOR, Ian; LAWN, Martin; ROUSMANIERE, Kate. «Imaging Past Schooling: the Necessity for Montage», *Review of Education, Pedagogy and Cultural Studies*, 22, 1 (2000), p. 71-85.

17 LAWN, Martin; GROSVENOR, Ian. «When in doubt, preserve»: exploring the traces of teaching and material culture in English schools», *History of Education*, 30, 2 (2001), p. 117-127.

went out through that way and that door was over there and this door was here and two doors to come, in that door and this door, and stockroom here and cloakroom there for coats and so on» (Extract 1, Interview 21st July, 2008).

Difficult to understand or imagine, but this is time and space compressed in a single paragraph by a teacher who had experienced it over several decades. There was no dramatic rebuilding but a series of small-scale changes which resulted, over time, into a reordered main entry. Just outside this area, external fire escapes had been removed [from the upper floor to the playground], the wet playtime shed and a long wall, separating girls from boys had been removed. The concept of sedimentation emerged. During their operational use in schools, objects from being crucial to innovation, turned into objects misused or re-used in new contexts, and finally into a lost or dislocated existence. Often, they co-existed over time, they did not disappear. Classrooms were reached by corridors, with a door to each. In one case, it was not clear why one classroom had two entries: «there were 2 separate classrooms [over there] until the early 1960s when the Permanent Secretary for Education visited the school – they timed her visit through the school for her to go round so they actually built a doorway through from one class into the other just for her to walk through» (Extract 2, Interview 21st July, 2008).

A new doorway had been created by the local city authority to enable a government official, visiting from London, to have a quicker visit of inspection. A more complex issue was in the upper floor: «This room was a classroom, which is now the computer suite, was used as a stockroom at one time. Where we are, there was a door and there are toilets and a corridor. All this was 3 classrooms but in between the 3 classrooms there (were) these big rollers that went up so that the whole upstairs could open up and be used as one big hall. I had that classroom at one time, this was a nice big class room, the only thing was that if you went through you had to walk through every class room if you wanted to go out of the class at the end you had to walk through 2 classes to get to it» (Extract 3, Interview 21st July, 2008).

When the school plans were extracted from the city archives, it appeared that the school was built at a time when the model used was derived from the great private schools. Teaching took place in in large halls. When occupied this would have been altered immediately, teaching would take place in classrooms, and the awkward space would have to be managed.

Further construction work in the schools concentrated on redundant (but not removed) pipes, or deep grooves in walls, hidden cupboards, all signs of

an earlier function or layout. The term sedimentation seemed apposite here, layers and layers of usage could be investigated, and the past meanings of teaching imagined.

3. METHOD

So what was our approach to the study of schooling? It was experimental. It was based on curiosity and inevitably, speculation. Briefly our unspoken approach, at least at first, was based on Richard Cobb's dictum, «More and more I enjoyed the excitement of research and the acquisition of material... as ends in themselves». We were influenced by several books, drawn from museology, geography and architecture.¹⁸

Although a focused approach to historiography and methodology was developed, it began with whatever we could find or read or view. It continued by using artefacts [visit plans, technology stores, school image collections, visual artefacts – brochures etc.]. Beginning a case study of a school, through photographs of its walls, doorways, windows, stairwells, rooms, furniture and outside places, we began to see the school site as a new text, a source of information about schooling which had been neglected. We began by drawing upon ideas from contemporary theory in cultural studies, geography and the sociology of technology to assemble ideas and arguments about objects in situ, linked to school or class routines, innovations in teaching, office work, data recordings etc. In the sociology of work and technology, work is viewed as a common-sense ordering of tasks, space and people. But Foucauldian influenced actor network theory, involving objects, relations, routines, spaces, and histories, treats people as being «worked» as much as «working». Technology moves from the shadows, a quiet presence, and into an effect, and even into a relational position, connecting people and objects into a close series of affiliations and actions. Teaching can be seen as a series of networked operations, involving objects, without which the teacher is unable to act, which need to be mobilised and which have no effects without the teacher (and vice versa?).

18 MARKUS, Thomas. *Buildings and Power*. London: Routledge, 1993; SCHLERETH, Thomas. *Cultural History & Material Culture. Everyday Life, Landscapes and Museums*. Charlottesville: University Press of Virginia, 1992; PRED, Allan. *Lost words and lost worlds: modernity and the language of everyday life in late nineteenth-century Stockholm*. Cambridge: Cambridge University Press, 1990; PRED, Allan. *Recognizing European modernities: a montage of the present*. London: Routledge, 1995.

We felt that the school needed a new methodology, a close observation of textures, materials, usage, volume and flow; and a constant return to questions about space and time in schooling. The initial aim of reconstructing the classroom, its culture and social relations, expanded, reflecting the concepts and expertise we developed. The idea of reconstruction had itself become deconstructed and the idea of the authentic reconstruction, focussed on visits to local and national museums, had to live in tension with the ideas about perceptions of authenticity and alternative explanations and reflexivity. Additionally, new theorizing about the systematic relations between designs, artefacts and people raised experiential evidence about the silences in the act of reconstruction. Similarly, methodological innovations, in the use of filmic evidence or the importation of other critical frames to analyse images, raised issues about the representation of classrooms.¹⁹ Single forms of portrayal or symbolic depictions or key artefacts were no longer treated as convincing by themselves and attention turned to the relations between representations and a way in which they could be used in conjunction. Boundaries to explanation were fragile; each case had its own interpretation but new theorizing was tested against experience and back to the case. New concepts, seen as viable in analysing classrooms, included space and technology, had been overshadowed in the past by narratives of personal endeavour and professional/state growth in education surfaced in these historical conversations.

In determining our method we were influenced by the way in which the documentary filmmaker Humphrey Jennings used montage in his «imaginative history» of the coming of the machine;²⁰ by the theorizing of Walter Benjamin;²¹ and by Alan Pred's application of Benjamin's ideas in his book,

19 See WARMINGTON, Paul; VAN GORP, Angelo; GROSVENOR, Ian. «Education in motion: uses of documentary film in educational research», *Paedagogica Historica*, 47, 4 (2011), p. 457-472. This essays appeared in a special issue of *Paedagogica Historica* edited by Angelo Van Gorp and Paul Warmington: *Education in Motion: Producing Methodologies for Researching Documentary Film on Education* which included essays on Belgian, English, Scottish and Portuguese documentary films.

20 JENNINGS, Humphrey. *Pandaemonium 1660-1886: The Coming of the Machine as Seen by Contemporary Observers* London: Macmillan, 1995 (1st ed. 1985). It is a coincidence of history that Charles Madge who edited Jennings' original manuscript was based in Birmingham.

21 BENJAMIN, Walter. *The Work of Art in the Age of Mechanical Reproduction*, in *Illuminations*, trans. Harry Zohn, London: Fontana, 1973 (1st ed. 1936), p. 219-254; Benjamin, Walter. *A Small History of Photography*, in *One-Way Street*, trans. Edmund Jephcott and Kingsley Shorter, Verso: London 1979 (1st ed. 1931), pp. 240-57.

*Recognising European Modernities.*²² Benjamin's work covered a wide range of themes, but much of it is motivated by a desire to understand the nature of experience within the contemporary present. For Benjamin, in order for the present to be understood and recorded the complex relationship between the past and the present, between history and events occurring in the lived Now had to be understood.

Benjamin's concern with this problem was intertwined with two other interrelated themes in his work: first, his fascination with the urban experience, of living in the modern city; and second, the problem of representing that urban experience. The spaces and buildings of the modern city framed social activity and provided surfaces upon which traces of human social activity could be found, read and deciphered. Living, for Benjamin, meant leaving traces. In his cityscapes Benjamin's critical enterprise was to make visible the invisible, to retrieve the traces left behind by the inhabitants of the modern city. His chosen method was montage: «I needn't *say* anything: Merely show»²³ Montage offered the power to shock by confronting the ordinary with the extraordinary and forcing a discarded, forgotten past into an unfamiliar constellation with the present. The strange became familiar and the familiar became strange. Presented with a mosaic of images (visual or literary) of the modern school, (of the designed space, of pupils and teachers inhabiting that space, of the artefacts of learning and teaching) the historian of education can venture into the landscape and encounter, read and decipher the traces of schooling. The cut-and-paste of montage allows what is peculiar, what is unsaid, what is insignificant, what is excluded, what is at the margin of school histories to become an object of knowledge. At the same time, the historian can not only retrieve and reconstruct the experience of past schooling but can also illuminate elements of that past by juxtaposing the fragments in alternative patterns to produce different meanings and understandings of past schooling. By deliberately deploying the ordinary with the extraordinary montage confronts the reader/viewer with the possibility of seeing and making associations which otherwise would go unmade. Montage was the approach we used at the workshop at ISCHE Kortrijk and evidenced that the juxtaposition of fragments from the past can produce mutual illumination and new (hi)stories of schooling can be told.

22 PRED, Allan. *Recognizing European modernities: a montage of the present*. London: Routledge, 1995.

23 BENJAMIN, Walter, *On the Theory of Knowledge, Theory of Progress*, in *The Arcades Project*, trans. Howard Eiland and Kevin McLaughlin, Cambridge (Massachusetts): Belnap Press, 1999.

Looking at contemporary classrooms was insufficient without finding the traces of the past, the sedimentation of material changes. The relation between pasts and present was as much guesswork and inference as it was close historical investigation. Time and space were not fixed, either independently or in relation, but were co-present, and we felt, that with help, we could discern, collect or relate ideas and evidence together. We came to recognise that the past is always present, and the present is a guide to the past. Montage continues to shape our work.²⁴

4. COPING WITH MATERIALISM STUDIES IN SCHOOLING

Unsurprisingly, trying to find or even stumbling across, useful sources meant that other fields of study became open to our borrowing of ideas and references. This was often a wide ranging and heterogenous process, sometimes leading to dead-ends and overlooked opportunities.

When talking about cultural history, Schlereth²⁵ focused on meanings and the symbolic products of thought and action. This sense of artefacts as a material form of ideas and as a conduit of meanings is most common within a material culture definition drawn from historians, anthropologists and museum collectors.²⁶ The subject is defined by its focus on material evidence first, and then moves out into culture. The value of an interdisciplinary approach and accumulation of insights from contemporary theory in cultural studies, geography and the sociology of technology enabled the assembling of ideas and arguments about objects in situ, linked to school or class routines, innovations in teaching, office work, data recordings etc. Museums have been a fruitful source for the history of objects, such as wall charts, primers, desks and slates, and their transnational flow into other systems. An interesting source of ideas is the contemporary sociology of work and technology in which work

24 See GROSVENOR, Ian; DUSSEL, Inés; KESTERE, Iveta; PRIEM, Karin; ROSÉN RASMUSSEN, Lisa; VAN GORP, Angelo. «“We seek revelation with our eyes”: engaging with school cultures through montage», *Encounters in Theory and History of Education*, 17 (2016), p. 2-26.

25 SCHLERETH, Thomas. *Cultural History & Material Culture. Everyday Life, Landscapes and Museums*. Charlottesville: University Press of Virginia, 1992.

26 Schlereth describes, under the term ‘material culturists’ a broad range of specialists who have an interest in material culture evidence: historical archaeologists, cultural anthropologists, historians of technology, cultural geographers, art, architectural and decorative arts scholars, folk life researchers, and cultural historians (p. 17).

is viewed as a common sense ordering of tasks, space and people. Foucauldian influenced actor network theory (involving objects, relations, routines, spaces and histories) treats people as being «worked» as much as «working». In this way, technology moves from the shadows and into an effect, and even into a relational position, connecting people and objects into a close series of affiliations and actions. Teaching can be seen as a series of networked operations, involving objects without which the teacher is unable to act, and having no effect without the teacher operationalizing them, and even discarding them.

The sociology of technology field was and is a useful source of thinking about tools and knowledge, for example, using Bijker et al (1987),²⁷ technology can mean simple objects or artifacts (a reading primer, for example), it can mean a process (a production process) and it can also mean the know how or tacit knowledge used in creating the tool or managing the process. In education it tends to be used mainly in the first sense and rarely in the second or third senses.

An overlooked but essential technology was and is the pencil. Pencils – like, scissors, exercise books, rulers, compasses, rubbers, pencil sharpeners, text books, ink bottles and felt pens – are the very essence of schoolwork, objects which circulate constantly and are too commonplace to mention. Pencils exist as the core of schoolwork, a key technology of reproduction, which newer machines are slowly replacing.²⁸ Pencils are consumed by schools in large quantities, they also constitute items which school budgets can manage. They are crucial to drawing and writing, but they only became central to schoolwork at the turn of the 20th century when their purchase cost was reduced by large-scale American manufacture. A book on class teaching, produced in 1895 in the UK, recommended paper and lead pencil for pupils learning to write, although this was more expensive than slate and slate pencil. The argument was in favour of discipline, less errors and greater quality – the writing might gain in quality, though losing somewhat in quantity, by the substitution of paper for slates. The pencil, like the slate pencil, was engaged with «imitation»

27 BIJKER Wiebe E.; Parke Hughes, Thomas; Pinch, Trevor (Eds.). *The Social Construction of Technological Systems: New Directions in the Sociology and History of Technology*. Cambridge (Massachusetts): MIT Press, 1987.

28 See, DUSSEL, Inés. «The Digital Classroom: A Historical Consideration on the Redesigning of the Contexts of Learning», GROSVENOR, Ian; ROSÉN RASMUSSEN, Lisa (Eds.). *Making Education: Material School Design and Educational Governance*. Cham (Switzerland): Springer, 2018, p. 173-196.

of the teachers' work on the blackboard but it then allowed the use of copybooks to be developed and integrated with blackboard activities. Combining the blackboard, the pencil, and the copybook into an effective method of teaching, especially of the teaching of writing, was a «device» or system of related technologies which has continued in modified form since. But pencils aren't a simple technology. To achieve an effective point on paper, major problems of production had to be overcome. Turning that «relatively scarce, brittle and dirty substance» into a reliable, strong, reusable and cheap tool for schools had taken manufacturers into complex engineering, raw material and marketing problems. By 1910, more than twenty million pencils were being sold each year, mostly to schoolchildren, in the USA. Its school infrastructure – as engineers would say – allowing it to function, included paper, pencil sharpeners, erasers and smooth desk surfaces. By achieving a good design and combined with an effective infrastructure, the pencil had become a technology which had been rendered almost invisible through common usage.²⁹

Teachers were producers as well as consumers in the school: sometimes, they made the objects, chose the materials used and controlled the process of manufacture. Early descriptions of schools and their equipment describe them as recipients of local and national materials and as the creators of tools and systems. The journal *Teachers' Monthly* in England, in the late 19th century, produced a book, called *Teaching Wrinkles* (a «Wrinkle» being a tip or timesaving idea). It was described on the front page as «a collection of devices gathered from all parts of the UK to assist the Teacher in his [sic] work». These «devices» were suggestions by teachers, sent into the magazine, based upon their own practices and organized by the curriculum subject (English Grammar, Arithmetic etc.). They involved teachers creating materials out of wood, sand trays, newspaper, clay and plaster. Sometimes, the Wrinkles suggested systems in which school or commercially produced tools were used. For example, a slate cleaning drill involved sponges, a yardstick, a shallow tin, a cupboard and a series of movements by the teacher and the child. A simple system constructed for a critical purpose, it had to maintain discipline, establish routine and be effective. A whole elementary class, perhaps 40 or 50 children, cleaned their slates by command: slate rubber out; arms folded; slates ready [teacher walks round and wets each slate]; pupil rubs slate dry; slate rubbers

29 PETROSKI, Henry. *The Pencil: A History of Design and Circumstance*. New York: Alfred Knopf, 1989.

away; hands behind backs; and the lesson starts. As group or individual tasks developed in popular education, later in the 20thC, the same relation between disciplined task and object continued, but a successful routine had to become pupil self-managed and evaluated.

This is a social view of technology in which a complex set of artifacts, actors and structures, and a set of socially constructed principles, procedures and processes, devised to function effectively and realize a purpose, are all in play. A child looking at the blackboard involved the «fusion of extrinsic agents (light, desk, sign, scope), forms of discourse (rules, tests, laws, norms) and physiological entities (eye, retina, optic nerve, brain, hands)». ³⁰ The «perfect eye» was «regarded not merely as a good thing in itself but as a sign of well conducted and symmetrical growth of the whole body» and the classroom was viewed as a space where vision was rendered «strong and healthy and fitted to withstand the strain that may be thrown upon it in after life». Unfortunately, defective illumination, poor desk design, habitual writing exercises, unsuitable letter fonts, and poor quality writing paper all combined to create an environment deleterious to normal ocular development. ³¹ Similarly, hearing, sound and aurality were also deeply implicated in modernity's daily elaboration in the school. ³²

In the modernization of urban education, it is necessary to see technology as a material structure (spaces, walls, furniture, tools), as working procedures and also as a series of ideas and knowledge systems within the process of mobilization. Seabourne, the specialist historian of school architecture, stated that teachers are much more influenced by the physical environment than they often realize – «at any rate consciously». ³³ Yet the designers of those spaces of specialist education had purposes in mind which shaped urban educational experience: according to Thomas Markus, ³⁴ it was social control: «[Control] is

30 OTTER, Chris. *The Victorian Eye: A Political History of Light and Vision in Britain, 1800-1910*. Chicago: Chicago University Press, 2008, p. 46.

31 GROSVENOR, Ian. «Back to the future or towards a sensory history of schooling», *History of Education*, 41, 5 (2012), p. 675-688. See also, GROSVENOR, Ian; MACNAB, Natasha. «Seeing through touch: the material world of the visually impaired child», *Educar em Revista*, 49 (2013), p. 39-57.

32 BURKE, Catherine; GROSVENOR, Ian. «The Hearing School: an exploration of sound and listening in the modern school», *Paedagogica Historica*, 47, 3 (2011), p. 323-340.

33 SEABORNE, Malcolm. *Primary School Design*. London: Routledge & Kegan Paul, 1971.

34 MARKUS, Thomas. *Buildings and Power*. London: Routledge, 1993.

in the buildings which were adapted or purpose built, the space thus created, and the material contents of this space – furniture and equipment. Above all, it is in the order imposed on the human bodies in this space, down to their tiniest gestures, including the gaze of their eyes». ³⁵ Such a spatial examination of schools [and other educational spaces] would concentrate on how the building is designed for use (flow, observation and constraint) and the way in which the fixedness of the material technology shapes its function through order, classification, compartmentalization, segregation etc. Cuban focused on the way a school space is physically arranged; how content and students are organized into grade levels; how time is allocated to tasks; and how rules govern the behaviour and performance of both adults and students. ³⁶ It was not our intention to build a deterministic perspective on schooling, but to draw attention to its ubiquitous but often overlooked elements. Histories of school buildings do make these references, often in passing, but there is little on the technologies of schooling, their operations and routines, and their design and supply. Again, to study the materiality of schooling leads, within a couple of steps, into company histories, advice columns on usage, and evidence of cost and economy. It leads away from the known subject, the history of schooling, and into a form of interdisciplinarity where the boundaries of what is possible creates a new methodology.

5. EXHIBITIONS

Studying school materialities led onto the production and exchange of pedagogic objects in national journals and later the exhibitions in which they were displayed. Exhibitions became a significant milestone in world trade, the exchange of scientific and technological information and the rise of international cultural and design movements. Trade, invention, production and innovation became viewable in a single space of comparison. Exhibitions created spectacles which influenced the future of selling and buying, and

³⁵ CUBAN, Larry; TYACK, David. *How Teachers Taught: Constancy and Change in American Classrooms, 1890-1990*. New York: Teachers College Press, 1993.

³⁶ See GROSVENOR, Ian; ROSÉN RASMUSSEN, Lisa. «Making Education: Governance by Design», GROSVENOR, Ian; ROSÉN RASMUSSEN, Lisa (Eds.), *Making Education: Material School Design and Educational Governance*. Cham (Switzerland): Springer, 2018, p. 1-32.

of cultural collection and display. Education became part of this as nations competed to outshine each other in the representation of progress. Exhibitions became the catalysts and the linking narrative between new systems, media, technologies and institutions.³⁷

As schools became part of the rise of the business of education, the advertising of commercial goods grew. The hidden space in our case school was filled with technologies which the school no longer used. The arrival of photocopiers in the school came with little warning as the local authority bought a large quantity in a special deal, and delivered them round the schools. It was an object which had to find a place and users

Exhibitions also became a pedagogic tool for exploring the traces and silences of past schooling. Between 2001 and 2004 we worked with the Portuguese photographer Paulo Catrica to document schools in Birmingham. Catrica's photographs invite us to look again. His images are of school spaces without teachers, without pupils. His attention is driven towards the appropriation and transformation of space – the sign on the walls, a door that is blocked. A classroom is a space that has been inhabited and he invites us to imagine how they have been occupied. He places the observer in a position of remembering. In 2004 we assembled an exhibition of his work and his images were placed alongside a sequence of images of Birmingham Schools from the 19th and 20th century. The images spoke to each other and to the audience. Another example of retrieving the past and asking questions about the present.³⁸

6. CONCLUSION

In this essay, we have reflected on our research journey through the material world of schooling to surface the possibilities that are created when the classroom is seen as constituting a social technology. Tools and aids, furniture and walls, space and form, all create teaching and are inseparable from it: the building

37 GROSVENOR, Ian. «Sites of the Future: comparing and ordering new educational actualities», LAWN, Martin. *Modelling the Future: Changing Education through World Exhibitions*. Oxford: Symposium Books, 2009, p. 15-30; GROSVENOR, Ian. «Pleasing to the Eye and at the Same Time Useful in Purpose: a historical exploration of educational exhibitions», LAWN, Martin; GROSVENOR, Ian (Eds.). *Materialities of Schooling*. Oxford: Symposium Books, 2005, p. 163-176.

38 JAMES, Peter; GROSVENOR, Ian; LAWN, Martin; NÓVOA, António; CATRICA, Paulo. *The White Room Series: Photographs by Paulo Catrica*. Birmingham: Birmingham Libraries and the University of Birmingham, 2004.

attempted to make the teaching method. Material structures and objects, the working procedures or routines which activated them, and knowledge about systems, generate schooling. These technologies, this material culture, the hardware and software of schools, allowed grander narratives about schooling to function as explanations for schooling systems, even though they appear invisible within them. They are produced by education suppliers, once local businesses, and now major suppliers of generic technologies, used in offices, the home, commerce and networks.

It is common to think about the teacher as the dominant element in classroom systems, working with or overcoming the design of the building, and using pedagogical objects as appropriate to their tasks. But there is also another view, that teachers [and pupils] are worked by their classroom viewed as a social technology, that is, as a set of socially constructed principles, procedures and processes, created to function effectively and realize the purposes of schooling. To observe the working classroom, it is necessary to see it as hardware and software; it is the material structure (spaces, walls, furniture, tools), and the working procedures, artefacts and knowledge systems which are integrated together.

The relation between the organization of mass schooling and its sustenance by simple technologies, the ways in which class and school routines bind together objects and actions, the particular relation between innovators and artefacts, and the economy and method of production of school artefacts. For historians, the question of how objects and routines arrive in school, how they exist there and what happens to them could open up the less visible aspects of school history. The problems we have are to do with their existence in schools and their operational use, including their shift from modernisation to sedimented or lost existence, and back to awkward innovation again.

Schools come into being, designed to incorporate new technologies of education [tools and systems] and yet very soon after, parts of schools resemble museums of technologies. They soon become sites of layers of sedimented materials as they slowly accumulate texts and tools. They are also repositories for outside objects, filtered through the net of poor financial resources in the school. Significant changes in curriculum, pedagogy and technology have to change the order of the classroom, not always successfully.

The school exists as a single idea and place which is at the same time an imagined space; a museum of practice; a repository of ideas, expressed in material form; a settled, but changing landscape of ideas and objects; a receptacle

for new ideas, and always a work in progress. Many observers see schools as a site of networks of information, technology, service; of consumption and production; and of awkward resistances and slow change. A material history perspective and practice recognises the complexity of the subject and the invention necessary to study it.