

This is a pre-print article. Please cite the original: Adam Wood (2019) "Built policy: school-building and architecture as policy instrument", *Journal of Education Policy*, DOI: [10.1080/02680939.2019.1578901](https://doi.org/10.1080/02680939.2019.1578901)
For more info: architectureandeducation.org

Dr Adam Wood, Visiting Researcher, Monash University

Built Policy: School-building and Architecture as Policy Instrument

School architecture is often taken for granted both in use (where it is naturalized) and in writing on education policy (tending to feature simply as policy setting.) Built policy instead points up the active and ongoing role of the material environment in shaping education. From financing and procurement to the design of individual classrooms, the paper works across architecture, sociology and policy studies to clarify the relationship between different dimensions of physical and social space and so provide a useful theoretical ground for future work. What is special about school-building and architecture that enables them to do policy? How are they used to do it? By whom? From city planners to students, a range of actors use different space-organizing resources to attempt the instantiation of (and challenges to) policy in built form. These processes are explored first theoretically, then empirically through a new Academy school in England. The paper deepens understanding of what policy is, emphasizing its intimate if taken for granted spatial characteristics, its ongoing-ness in built form and its travel by means of circulating images of buildings and spaces.

Keywords: architecture; policy; schools; school-building; built policy

Introduction

The curriculum, the rule book, the headteacher's policy, the staff hierarchy, the punishment regime and other socially prescribed matters may appear to exert a far stronger influence on the way a school works, but the spatial setting is nevertheless ever present and never neutral ... We become blind to this once habituated in the use of a building, for it seems just to be there, and we have to make an imaginative leap to envisage how it might be otherwise (Blundell Jones 2015, 13).

This paper explores how school-building and architecture are used to do policy. Although its principal aim is therefore to open up questions about what buildings do to organize education (and how), in the process what policy *is*, is reconsidered. It is true that school buildings are settings for educational policy but the paper emphasizes their additional, more active roles as policy instruments, that is, attempts at operationalizing policy in built form. Because buildings have effects over long periods of time and many different actors are involved, the simple

designation *built policy* quickly becomes more complex and more interesting. I use Lascoumes and Le Galès' (2007) framework from political sociology to explore this complexity, and architectural theory to illustrate the implications of physical space and its organization. The paper is therefore largely conceptual: it clarifies the properties of buildings and architecture and their potential interactions for future theoretical and empirical work whilst facilitating connections across extant studies in architecture, education and sociology. However, to ground the theoretical points made, I also discuss examples from ethnographic research in an English academy school built under the Building Schools for the Future (hereafter BSF) programme.

I detail Lascoumes and Le Galès' approach in Part 2. Briefly though, it offers tools for 'looking from the point of view of the instrumentation at work' (2007, 6) and so is useful for exploring *how* it is that school-building and architecture can do policy, countering their tendency to be taken for granted and making them more readily available for analysis. In this view, policy instruments are types of institution, devices at once 'technical and social, that organize[] specific social relations between the state and those it is addressed to' (ibid, 4). Built policy – the urban planning, construction, design, use and coordination of buildings and their spatial organization – fulfils these criteria, buildings being special kinds of material and semiotic object that make them particularly apt as institutional forms of collective meaning-making and control, their '[p]hysical institutional structures' observes McCaffree, drawing on Searle, are 'spread across geographical space in order to provide a contextual scaffolding for the performance of various roles' (2018, 13). Hence, when Ball (2016, 1) writes that 'thinking about the spaces of policy means extending the limits of our geographical imagination', I agree and think that argument is productive 'downwards' too, requiring an extension of our *architectural* imagination into the smaller and more mundane spaces of policy. Following the instrument into (and as) buildings therefore offers a useful methodological complement to following policies themselves (ibid). In this way, built policy includes but develops what Torin Monahan called 'built pedagogy' – the 'architectural embodiments of educational philosophies' (Monahan 2002, 5) by highlighting the processes and material resources used in building, and showing their relevance for policy. Understanding what policy is and how it is realized (and reinterpreted) spatially is made clearer, exposing the socio-spatial work we are often blinded to as the architectural historian, Blundell Jones (quoted above) observed.

A few notes on the selection of key spatial and architectural concepts, and terminology. While geographically- and sociologically-derived theories of space have usefully extended educational discussions of spatiality and policy (e.g. Robertson 2010), architectural theory has been neglected. This is odd because, as I will show by drawing on the works of two architects, Giancarlo De Carlo and Herman Hertzberger, architectural theory offers rich, well-tested, conceptual vocabularies. In particular, De Carlo's and Hertzberger's long-standing and deep intellectual engagement with spatial, educational questions provides a useful analytic counterpoint both to school design fashions and the economies producing them, and to the recent tendency for 'space' in policy discussions to mean that which is economic, geographical or global with the consequent risk of losing immediate, lived space. Alternatively, where both scales or 'domains' are discussed (e.g. Ferrare and Apple 2010), the actors, resources and causal mechanisms connecting them remain indistinct. These difficulties are partly mitigated by seeing 'urban planning and architecture as interdependent scales of the same problem' (De Carlo and

Bunčuga 2014, 104¹) so obviating the need to choose between them – a disciplinary and epistemological division reproduced in the literatures which generally favour buildings *or* geography (*or* urban etc.) This approach derives from the more holistic traditions of architecture, urban planning, geography and sociology that influenced De Carlo through Lewis Mumford (1938) and Patrick Geddes (see De Carlo and Bunčuga 2014, 77-8) among others. However, it is also a logical consequence of understanding architecture as ‘the organization and form of physical space’ (125), a definition I use throughout the paper first because it includes but is not limited to buildings and second because it usefully provokes questions of agency, time and causality e.g.: Who or what is involved in organizing physical space and with what resources? When and for how long? How do physical and socially-produced space relate? Educationally it is useful too – it counters the tendency to research schools as ‘self-contained, spatially and temporally insulated islands’ (Nespor 2002, 485). Throughout, I accept architecture is both art and technology (De Carlo 1980, 77), but emphasize the latter by focussing on buildings as spatial technologies; architectural aesthetics are beyond the scope of this paper. If architecture involves enclosing, guiding and so contributing to defining education and shaping educational work, the approaches I draw on nevertheless avoid determinism and instead leave space for and even incite users to engage in their own ‘space-making’ (Hertzberger 2008, 21). Indeed, both architects’ writings and designs focus on users’ making and adapting space (De Carlo 1969; 1980; 2005; De Carlo and Bunčuga 2014; Hertzberger 1969; 2008). Finally, the hyphenated verb ‘school-building’ refers to the ongoing organization of space through financing, planning, design, construction and adaptation. I leave the count noun ‘school building’ to mean the educational thing and place.

The paper derives from work on school-building and school architecture in Italy during 2017-8, and ethnographic research in a new Academy school in England (2013-15). It has three main parts and a conclusion. Part 1 presents the properties of school-building and architecture and what they can do. Part 2 shows *how* they can be used to do – that is, how built policy in the form of school-building and architecture as a policy instrument works and is put to work. This part draws extensively on Lascoumes and Le Galès’ (2007) framework. Part 3 mobilises that framework to discuss a school in England (3.1). Interview data from the ethnography raise further questions about the mobility of education policy (in 3.2) and how this is helped, somewhat ironically, by fixed and heavy buildings. In section 3.3, I explain why it is necessary to consider spatial quantity as well as the qualitative, organizational form of space. School closures are discussed in 3.4, part of a broader suite of ‘neoliberal spatial technologies’ (Gulson 2007, 184). The conclusion ties these perspectives together and suggests future directions for study.

Part 1: Policy and Architecture – attempts at organizing space and meaning

Architecture, understood as the organization of physical space, stabilizes social life (Gieryn 2002, 35) but does so almost invisibly; there is a ‘general societal blindness to interior space’ (McCarter 2016, 27). Nonetheless, it has been argued that architectural ‘techniques of power, control and the management of spatial relations are fairly straightforward to document’ (Maguire et al 2011, 599). A conundrum then: how can we be both blind to something *and* document it easily? Perhaps it helps to recognise that documenting the kind of space that is

¹ This and all other non-English publications are my translations.

straightforward to document is not all space is; space is more than ‘that business of laying things out side by side’ (Massey 2005:27), making a multi-dimensional approach to space advantageous.

It is useful to think of school spaces broadly: as physical containers *and* spaces constituted through the actions of people; as existing across dimensions of size e.g. from the largest spaces of schooling in a policy sense (e.g. funding and procurement, urban planning, government design norms and spatial budgets) to the smallest (e.g. individual spaces within a school); and as being partly dependent on the relations between these dimensions. This helps to integrate concepts of space which continue to be neglected or are treated tokenistically (Sayer 2000, 112) and gains from seeing the urban and the architectural interdependently, as similar kinds of problem (De Carlo and Bunčuga 2014, 104, cited earlier). This makes the internal relations between dimensions – a key element of what schooling and a school *are* and how it is lived – more readily available for analysis and discourages abstracting the school-as-island, for example (Nespor 2002). Holding multiple dimensions of space in view is also useful to point up (in)coherences and interactions between individual spaces, whole school buildings and the processes and people building and working in them.

This is where Lascoumes and Le Galès’ thinking of policy instruments as institutions becomes especially useful. School-building (and the architecture operationalising it) are now seen, like other institutions, as a ‘packaged social technology’ (Jepperson 1991, 147). That package can be explored through Lascoumes and Le Galès’ three levels of observation: instrument (e.g. school-building overall); technique (e.g. architecture operationalising the instrument); and tool (e.g. designed spaces as micro-devices within a technique). Part 2 details this framework so that unpacking but keeping the parts of school-building in view helps to understand how spatial organization is used in social organization, important because we need to ‘take systematic account of how places and spaces enter into the organization of social life and social action’ (Atkinson, Delamont, and Housley 2008, 146).

If institutions are ‘vehicles for activity within constraints’ (Jepperson 1991, p.146) then policy instruments such as school-building and the architecture it comprises are attempts at materialising vehicles *and* steering them *and* fixing their directions of travel. Steering is normative: when ‘values, intentions and even social relations become concretized’ Lawson notes, we are, in effect, talking about ‘essentially social things becoming material. As such, given the relative concept-space-time independence of material things, there is [now] a relative durability and travel that is possible for those otherwise precarious aspects of the social world’ (2008, 55). The following section explores the capacity of buildings to do policy by identifying further key features of buildings and the potentials these features grant.

1.1 What Makes School-building and Architecture Special?

Buildings and architecture exhibit a number of characteristics that make them particularly interesting from a policy perspective: their dual or ‘mixed’ material and semiotic nature together with their size and ability to be entered; their longevity and so their ongoing-ness in terms of providing continued spatial organization and durability of the social.

Many writers have noted that the dual material-semiotic status of buildings is key to their use and their appropriation. It is best treated as an analytic distinction² to splay apart what Foucault called the ‘mixed’ qualities of school space, simultaneously ‘real because they govern the disposition of buildings, rooms, furniture, but also ideal, because they are projected over this arrangement of characterizations, assessments, hierarchies’ (1995, 148). This *mixedness* is also central to school-building and architecture’s role as policy instruments, ‘devices that mix technical components (measuring, calculating, the rule of law, procedure) and social components (representation, symbol)’ (Lascoumes and Le Galès 2007, 7) and is worth some picking apart as a result.

Buildings have a semiotic capacity and are both sites and mediums of discourses: ‘we encounter discourses in and via *semiotic objects*: buildings, texts, rituals...’ (original emphasis, Kress 2010, 110). Like texts, buildings are material; *unlike* texts, we can (and usually have to) go inside buildings. Consequently, questions of power, the range of physical action possibilities and limitations, and the negotiation of meaning in buildings are more direct and less avoidable than they are with most other semiotic objects.

The material dimension makes the temporal and authorial structuring of buildings especially relevant for thinking about policy. We enter buildings that are *built*. Entering is also therefore subjecting ourselves (even in small part) to someone else’s design. Clearly, space can (and to do it justice, should) be thought of socially, ‘as the product of interrelationships’ (Massey 2005, 9). However, it is never the product *only* of relationality, and never produced entirely under our terms alone since ‘human agency is both ... *production*, and (normally unconscious) *reproduction* of the conditions of production, including society’ (original emphases, Bhaskar 2011, 92) and society is always, already spatial (Sayer 2000, 110). In an inevitably open, social world, physical space cannot determine action but neither can it be jettisoned from explanatory accounts of that world. The pre-ordered ordering of space begins upstream of social action, the result of other people’s decisions, interests and values. This architectural-action disjunction has increased over time. Modernisation has meant that:

...layers of bureaucracy and specialist procedures compel experts to intervene between the user and the building. These experts bring with them their own value systems that are often at odds with those of the users. A gap thus opens up between the world as built and the world as needed and desired (Blundell Jones, Petrescu, and Till 2005, xiii).

As we shall see, this gap further increases with the financialization of school design. Architecture is therefore always an operationalization of *others’* values relying on an immersive, semiotic environment to communicate them and a material reality to instantiate them.

The degrees of ‘play’ in this system can be modelled along what Jeremy Till conceives as a hard-to-slack continuum of designed, physical space. At one extreme, *hard* space is the spatial

² The material-semiotic distinction also helps to identify how architecture is *principally* being used to organize space in a particular case i.e. whether by materially constraining and enabling (e.g. through the physical impassibility of walls, the vertical support and division by floors etc) or mainly semiotic (e.g. a change in colour, lighting or orientation of chairs and desks). In reality, any material in social use is working both physically and semiotically: ‘Meaning needs matter to realize it; at the same time, matter needs meaning to organize it ... The balance between the two is constantly shifting’ (Halliday 2003, 3).

organization used to maximize stability by reducing action options within a designed environment. *Slack* space, in contrast, is still clearly

...designed, but probably not overdesigned. It allows the user to make choices within its frame, and in this asks eventually who the designer of space is – in effect, it asks architects to share their design with the designs of others that evolve in the course of occupation...’ (2009, 134)

De Carlo brought similar thinking to schools: ‘The most important thing is that structure and form leave the greatest space for future evolution, because the real and most important designer of the school should be the collectivity which uses it’ (1969, 32). This raises questions again for thinking in policy terms – I return to these later.

Till and De Carlo suggest the importance of time and change to buildings-in-use. It is because buildings are designed to stand up for a long time and tend to be inhabited by relatively stable groups of people spending a lot of time in them (*and* in regular, repeated, ritualized units of time) that the ongoing-ness of spatial organization matters so much. School buildings have time to do policy work, to accrue layers of meaning and to materially affect day-to-day activities all the while strengthening educational visibility and increasing its stability.

Relatedly, schools are a *type* of building (with causal powers deriving from that type-ness and which may exert pressure on future design) not simply an aggregation of individual cases. As policy ‘instrumentation is expressed in a more or less standardized form...’ (Lascoumes and Le Galès 2007, 7), so the existence of a school building type and its architectural legibility across communities provides shared (and *recognizably* shared) experiences of standardized spatial form.³ Familiarity with this especially public architecture can anchor schools in the imagination and institutionally since their ‘collective acceptance’ (Searle 1995, 39) is more successful when the type of institution can be seen (or at least imagined) and when it is engaged with day in, day out, in synchronized, common experience with others. Legitimacy and probably also a sense of inevitability are increased in this way too.

This combination of effects feeds forward: instruments-as-institutions ‘drive forward a certain representation of problems’ (Lascoumes and Le Galès 2007, 9) and that school-building is *ongoing*, further reinforces the legitimacy of school-as-solution to organizational and educational ‘problems’ across time and space. We therefore need to pay ‘close attention as to why some particular method of dealing with citizens comes to be seen or argued to be the “one best way” and which possible alternatives are “framed out”’ (Hood 2007, 141) and this paper is partly an attempt at exploring how school-building and architecture become recognized as establishing and securing the ‘one best way’ of doing education.

Together, these features represent the base of a potentially powerful understanding of how the built environment and the processes of its construction relate to policy. It is dynamic, pointing backwards in time (to discourses already materialised), forwards (to the instantiation

³ An exception proving the rule is the intentional use of ‘innovative’ aesthetic forms, colours, internal design – *atypical* features – to signal that something different is happening as with the early Academy buildings in England: they ‘literally stand for and represent, in their buildings and infrastructure, new, bold and different thinking – more of the dynamic rhetoric of New Labour’ (Ball 2007, 172; see also Uduku’s (2000) argument on the use of Western educational architecture in colonizing spatial and educational imaginaries and realities in West Africa).

of new meanings and discourses) and so also to the potential of the present as a shaped but underdetermined space of possibility. It is also complex – to break this complexity down whilst retaining the interrelationships between parts (and so their availability for analysis), Lascoumes and Le Galès’ framework is especially helpful.

Part 2: School-building as Policy Instrument – applying Lascoumes and Le Galès’ Political Sociology

This section describes school-building and architecture in Lascoumes and Le Galès’ terms and then explores the implications through a range of examples.

2.1 Mapping School-building and Architecture to Lascoumes and Le Galès’ Framework

Table 1 shows how a policy instrument comprises instrument, technique and tool (Column 1). These are explained in Column 2 and exemplified in Column 3. Column 4 maps my breakdown of school-building and architecture to Lascoumes and Le Galès’ framework.

Table 1. School-building and Architecture as Policy Instrument (after Lascoumes and Le Galès 2007)

Level of Observation	Description (from Lascoumes and Le Galès 2007, 4)	Examples (from Lascoumes and Le Galès 2007, 4)	School-building and Architecture Examples
Instrument	a type of social institution	census taking, map making, statutory regulation, taxation	School-building: an instrument enabling particular forms of education and other purposes, it includes financing, urban planning, procurement procedures, spatial budgets etc
Technique	a concrete device that operationalizes the instrument	statistical nomenclature, a type of graphic representation, a type of law or decree	Architecture: the ‘organization and form of physical space’ (De Carlo and Bunčuga 2014, 125), existing in representational form as <i>types</i> of spatial design, and materially as the actual ordering of designed spaces in and beyond schools
Tool	a micro device within a technique	statistical category, the scale of definition of a map, the type of obligation provided for by a legal text	Designed spaces: including, classrooms, learning environments, playgrounds, staffrooms, toilets.

2.2 School-building as Instrument

School-building provides visible, material evidence of the state’s work, past and present. As a policy instrument, it is a type of institution. It proposes and helps to maintain the relationship between society and those that govern it. It is processual: institutions are always instituting or they fail. This explains Lascoumes and Le Galès’ nomenclature (which I adopt) emphasising ongoing activity through the gerund: ‘census *taking*, map *making*’; or deverbal noun form: ‘statutory *regulation*, *taxation*’ (my emphases, 2007, 4). Similarly, school-building is a process and that ‘-*building*’ includes spatial *organization*, also understood as ongoing. This implies that

the organizers are distributed over time too, and it raises questions about the relative organizing powers over physical space, and the durability and legacies of preceding spatial organizations – I respond to these questions in section 2.5 where I also clarify how these organizing powers are related.

By focusing on the ‘choice and use of instruments’ (2007, 4), Lascoumes and Le Galès’ approach helps to undo some of the blindness associated with the naturalization of buildings and draws analytic attention towards the possibilities of change. This is timely since school-building’s *de facto* monopolization of the educational imagination and politicians’ tool-bag via large, physical constructions used to co-locate young people and adults is challenged by interests in digital and online educational spaces including virtual high schools in the US for example and proposals in England (Heppell 2016, online). That said, a longer view suggests caution. Historical challenges to the ‘hegemony of the classroom’, for example, have been continuous (Burke 2014, 52). Similarly, Audrey Watters shows how EduTech’s cyclical repetition of ‘fables’ (2017, online) about the imminent demise of physical educational sites is a key marketing strategy that relies on forgetting that the previous tech ‘disruptor’ promising to do that, did not.

This focus on the choice and use of instruments also foregrounds the question why we are building schools, for De Carlo the only proper starting point for an intellectually open architectural and political practice:

[W]e cannot deal with problems of ‘how to’ [build schools] without first posing the problems of ‘why.’ If we were to begin discussing immediately the best way to build school buildings for contemporary society without first clarifying the reasons for which contemporary society needs school buildings, we would run the risk of taking for granted definitions and judgments which may not make sense anymore; and our speculations would turn out to be sandcastles (1969, 12).

The relationship between taking things for granted, power and policy is key. As Bowker and Star (2000, 325) note, ‘When classification systems and standards acquire inertia because they are part of invisible infrastructure, the public is *de facto* excluded from policy participation.’ Focussing on ‘how to’ build schools (where most of the already limited architectural and policy debate happens) assumes the legitimacy of the spatial classifications that school types propose and so shifts debate away from what really matters – the ‘why’ of building schools is lost along with the broader political and educational opportunity it represents.

In fact, following the instrument of school-building suggests that what matters for governments is having a ready-made, highly socially embedded and in some senses automatic policy tool to hand. Schools are desirable and accepted ‘things’. Funding through them becomes highly visible and is highly distributed i.e. there is a good match between schools and population. In one sense, what school-building is *for* is of secondary importance because it can be for many things. This is school-building’s ‘generic scope’ (Lascoumes and Le Galès 2007, 6) as a policy instrument used in managing the ‘politics/society relationship’ (4) as the following selection of brief and wide-ranging examples are intended to illustrate. Thus New Zealand wanted to use new schools to ‘reshape education’ (Ministry of Education, cited in Benade 2017, 105) following the 2011 earthquake in Christchurch. This illustrates Dana Cuff’s thesis of architecture’s ‘crisis mentality’ where: ‘Disaster scenarios [real or exaggerated, we could note]

hold the potential for innovation: the old ways have not worked, so new solutions are necessary' (2012, 390). Australia's *Building the Education Revolution* used school-building explicitly to shore up the economy during the 2008 global crisis. Relying so 'thoroughly and unquestioningly on outsourcing to the private sector', it 'locked-in' that same sector, depleting public sector capacity and governance too (Parker and Cahill 2017, 268). Planners in 1960s' U.S.A. built vast educational campuses to encourage desegregation. One school was planned for 18,000 students to draw students across multiple, segregated city zones (Erickson 2016, 563). In Florence, Italy, a plan sees school-building and refurbishment as a 'tool of redevelopment for the urban periphery' (Città Metropolitana di Firenze 2017, 3). In each case, the instrument of school-building is oriented towards varied ends including but going beyond education – why we are building schools is therefore also a question about how we do politics at a very basic level.

Instruments require mobilization involving people, of course, but also funding. I move now to the more substantive issue of procurement – how schools are commissioned, financed and constructed. Procurement processes (and changes to them) offer a rich site of analysis to understand direct effects on educational buildings and changes in the politics/society relationship. The architectural historian Geraint Franklin observes that changes in school-building and design conditions in England today are both the effect and cause of structural political shifts in the procurement chain:

Long-term trends towards greater decentralisation, specialisation and privatisation of educational procurement and architectural design have altered the balance of power between centre, region and school, and contributed to a narrowing of scope and ambition from the programme to the individual project (2015, 73).

In particular, the use of Private Finance Initiatives (hereafter PFI, a form of mortgage where borrowing governments lease privately financed and constructed schools over 25-30 years) limits knowledge production and sharing. The 2007 Commission for Architecture and the Built Environment (CABE) report on English secondary school design quality notes that PFI reduces possibilities for dialogue between clients and designers (44). Leaman, Stevenson, and Bordass (2010, 576) further argue that PFI makes Post-Occupancy Evaluation harder (i.e. learning about buildings-in-use to improve specific buildings and general design knowledge and skills) because knowledge is effectively privatised within constructor silos and so shared less.

Mahony, Hextall, and Richardson (2011, 343) argue that PFI changes our orientation towards the present and future, describing it as 'a policy that seems to enjoin us to "live now, pay later", a principle that ... underpins BSF'. But *who* pays later? If PFI reduces future school-building capacity, it is an intergenerational transfer and extends the constituency of a public policy instrument since 'society' now includes people who have not yet been born.

For future users of school buildings, opportunities for influencing these issues are limited. They inherit the effects of decisions but have little role in making them. This positioning shifts when construction is complete and the potential to occupy (and modify) physical space is made available.

2.3 Architecture as Technique Operationalizing the Instrument

Architecture operationalizes policy in spatial form. Like policy then, architecture cannot

guarantee any particular outcome in terms of what people actually do. The hard-slack continuum discussed above is one way to model the likelihood that a particular spatial form will steer people. Ultimately, however, it is perhaps easiest to think of architecture (and policy) as *attempts* at organization since instruments only 'partly determine what resources can be used and by whom' (Lascoumes and Le Galès 2007, 9) and even relatively hard space can be interpreted and used in different ways. For example, in UK secondary schools, students tend to move space and subject when the bell rings whilst in Italy, teachers move. Despite similar architectures then, the UK's space-time-knowledge category-passaging and Italy's teacher-orbiting/student home room model exhibit very different realizations. Indeed, *who* the architect is – a question raised earlier – is important. On one hand it keeps the potential of space open and on the other it regards the right to stake a claim on space, to engage in 'attempts at the stabilization of meaning ... battles over the power to label space-time' (Massey 1994, 14). And labelling – the *attempt* at making a particular label from a range of possible labels stick – is both a spatial and verbal means to control the identity and purpose of school space over a range of scales as I will illustrate with the interview data in Part 3.

2.4 Designed Spaces as Tool within the Technique

Tools are a technique's 'micro device[s]' (Lascoumes and Le Galès 2007, 4) understood here as individual spaces that are parts of the architectural whole including: classrooms (or learning spaces); halls; outdoor spaces; corridors; toilets; thresholds and so forth. These smaller spaces with fewer people are likely to be more intimate and can be made meaningful and functional in ways that accord with more local and immediate interests and/or the willingness and ability of individuals to represent the interests of others.

Exceptions to these general rules include whole-school spatial policies stipulating individual or group work. Very occasionally, governments intervene directly as with New Zealand's Ministry of Education's insistence that: 'Schools need to upgrade learning spaces so they are FLS [Flexible Learning Spaces] ... FLS upgrades are priority 3 projects' (n.d., online).

The last example illustrates the significance of recent shifts in labelling practices (e.g. from 'classroom' to 'learning space') representative of new vocabularies operationalizing 'a particular technologization or instrumentalization of education' (Friesen, 2013:21). These vocabularies are both verbal⁴ and spatial: spaces *sound* freer than rooms and in a material sense, they *are* in that they are liberated from certain physical, cultural and financial constraints – rooms are (usually) walled and indoors, require construction (and demolition) by building professionals (and planning permission and financing) and therefore tend to indicate investment, commitment and conscious, public motivations or justifications. In contrast, anyone can make spaces. They are 'on demand' and *ad hoc* in ways that rooms are not.

⁴ Similar, non-English shifts exist too although perhaps more technical in usage e.g. aula > spazio di apprendimento (in Italian) and aula/salón de clases > espacio/ambiente de aprendizaje (in Spanish). My thanks to Paula Cardellino for the Spanish example.

2.5 The Relationship between Instrument, Technique and Tool (School-building, Architecture and Designed Spaces)

The organization of space is attempted by a range of actors across different times using different resources. Early in a building's lifetime, budgets, design guidelines and architects make organizational contributions with resources that tend to withstand (and so structure) later adjustments by others. Subsequent changes tend to be temporary as with a teacher's organization of physical space (via desks and chairs and people) in the attempt to manage the social space of individual-, pair-, group- and whole class-work. Students too are accomplished spatial organizers with extensive repertoires for ordering physical space and people (Dytham 2018) although their space-organizing resources (e.g. spatial distribution and orientation of their own bodies) are less permanent even than teachers' tables or architects' walls, wings and floors.

Although these space-organizing roles, resources and activities change as we move 'downwards' from the urban to the smallest spaces of a school and forwards in time from a planned to an inhabited school, it is important to recognize that these divisions in space-organizing are made especially rigid through particular industry practices and procurement. They are not inevitable and can be very different as I show in relation to the financing and structure of a participative design project in a Berlin school (***Author 2018***). Ultimately, good procurement and design rely on knowledge moving between different dimensions and practices of spatial organization – why PFI and its tendency to limit these movements is harmful.

Part 3: Discussion – applications and implications of Built Policy

This section serves two purposes. The first is to exemplify and so ground previous theoretical points through a discussion (3.1) of the pseudonymous Pottisham Technology Academy (hereafter PTA), a school on the outskirts of an English city. The second is to explore what is gained and lost in the approach so far adopted towards school-building and architecture. I do this by focussing on three issues. In 3.2 I argue policy mobility becomes especially visible through looking at buildings and so explore this through PTA. However, two important issues go unseen when the sole focus is spatial *organization*. Both regard the availability of space: spatial quantity (3.3) and school closures (3.4).

3.1 An Illustrative Case: Pottisham Technology Academy

Here I draw on interviews made during 2014-5 at PTA, a brand-new school rather than a replacement since the previous school was closed twenty years earlier. This, and the fact that the principal was involved in the design process full-time from 2008 until the academy opened in 2010, mean PTA is somewhat atypical although the case helps analytically by providing detail about planning and design processes that might otherwise be lost. It offers a rich example of the many spatial, design and financial issues that *can* come into play.

Although PTA opened in 2010, its procurement backstory⁵ began in 2006 when central government rejected the city council's request for new school-building funds. In late 2006, a new request was made, this time to build new *academy* schools. This new – and successful – attempt illustrates why we should, as Lascoumes and Le Galès (2007, 10) recommend, 'shed the illusion of [instruments'] neutrality'. Academy or not, there is no neutral form of school: 'every instrument constitutes a condensed form of knowledge about social control and ways of exercising it' (ibid, 3). This is further seen in attempts at spatial organization both at the architectural level of the technique (over the siting and the form of the whole school) and at the level of tool or designed spaces. For example, the planning application cited the decision to position the school at the junction of two busy roads as a strategy to create an 'urban landmark'. Architecturally, the academy principal oriented design outwards towards the wider community and inwards:

We were very conscious that the atrium would be an entrance and it needed to be imposing because it was sending out a message about what this building was about ... It [the internal design] was about the flow of the buildings so able to work out for a child what that might look like, you know, and that also impacted on things like not having things like assemblies in the morning or registration, going for electronic registration, so that it was almost a seamless thing, you come in at the front entrance, you go to your learning, that's what the place is about (Interview, Principal, 1/7/14).

The organization of the buildings and internal space (as well as activities and other technologies e.g. electronic registration) helps to get students to their learning as quickly as possible because 'that's what the place is about', for the principal at least. This reflects the fact that policy instruments-as-institutions 'eventually privilege certain actors and interests and exclude others' (Lascoumes and Le Galès 2007, 9). Here, though, architecture can be used from the outset in the attempt to establish certain identities. As Sara Ahmed argues, 'walls are differentiated: some bodies are allowed to pass through' (2017, 145), raising questions then about the identity of the right kind of learners and the right kind of learning for this academy. The general point, however, is that whoever gets to control the more enduring resources of spatial organization has a head start both in assigning an 'intentional imposition of function' (Searle 1995, 41) to the nascent institution and of securing the ongoing maintenance of that function while resisting others.

And yet, what this academy is about, its identity, cannot be defined only locally as if removed from space and time. Meaning, as Jan Blommaert notes, is 'derived from local enactments of historically loaded semiotic resources' (2015, 108) and is therefore also and always trans-spatial (ibid, 109). The principal and sponsor (the representative of a company supporting the academy) sought to anchor their vision of the school and its spaces to other, highly valued spaces and times. Justifying the open-plan design then, the sponsor noted that:

⁵ The backstory could of course be extended – why schools are closed (as the predecessor to PTA was) is an important issue I discuss later.

...looking back at the past isn't that helpful – we need to look at the best of research across the world and I know I did quite a lot of work on what people were doing in Australia and Scandinavia (Interview, Sponsor, 21/1/15).

A recurring theme is the contrast of 'the past' with the future (via 'research') but also with 'across the world' i.e. *elsewhere*. The principal's argument for open-plan learning spaces also relied on a here:elsewhere, present:future spatio-temporal contrasting structure albeit more implicitly:

A lot of the research at the time [2007-9 approximately] talked about changing spaces and particularly talked about 'transformational learning' and a lot of the research particularly coming in from countries like Australia and America was about having large, open learning bases (Interview, Principal, 1/7/14).

Elsewhere is a place ('Australia and Scandinavia' or 'Australia and America') but also a (future) time (of 'research', of 'transformational learning' and 'changing spaces' and 'large, open learning bases'). The future appears better than this contemporary but now historicised England. It is also a dynamic future, relying on high-value elsewheres being scripted into a local, nascent discourse of transformation. This use of architecture to move semiotic resources associated with the future is so common that I focus now on the detail enabling it to happen.

3.2 Further Notes on Mobility: Fixed Buildings and Moving Representations

The above story about PTA and the spatial vision of the future composed of ideas from across the globe and then planted in Pottisham is really an instance of buildings' more general and surprising capacity for travel. Too big and heavy to move directly, their size and form offer appropriate matter for their more mobile representations to replace them in circuits of the architectural imaginary. Plans and especially photographs offer easy, reductive and seductive ways of making buildings move as John Hardcastle, drawing on Walter Benjamin, notes:

[P]hotographic surrogates of school building have come to divert reader-consumers' attention from the way the building is actually experienced towards 'readable' (and thus marketable) visual styles ... visual representations of schools such as Pimlico and Holland Park are made to stand as emblems for ideas and policies that have a fashionable appeal and, crucially, a shelf-life like other consumables (2013, 665).

Represented buildings are double abstractions: distanced once from the actual building and again from actual experience. What we understand as a building is therefore an entity fixed in place *and* a highly mobile, abstracted vehicle of policy ideas and social values, coherent with understandings of policy as 'being moved *and* fixed' (original emphasis, McCann and Ward 2012, 47). Movement is key to market access, capture and development – points I return to shortly.

It is first necessary to show that this mobility-facilitating abstraction parallels what Sotiria Grek argues are 'the key ingredients contributing to PISA's success', namely: 'De-

contextualisation, commensurability and policy orientation' (2009, 27). For buildings and architecture, this can happen through institutional support for decontextualized spaces e.g. as '21st Century Learning Environments' (OECD 2006). However, these designs and discourses still need to be sold as the *Architects' Journal* made clear in an editorial launching the #GREATSCHOOLS thinktank: 'As schools behave more like private businesses they will be in competition with one another to attract the best teachers and students. Architects can draw on their experience in the private sector to help them achieve this' (2015, online). This still leaves the problem of commensurability. Decontextualization helps, but the movement of designs requires an active vision of interoperability so that bigger markets for school design can be promoted and further extended. In this way, school buildings can become (apparently) generalizable and generic spatial forms as indicated in Andrew Saint's re-telling of how open-plan designs came to be foisted on English schools:

Because of the variation in space-standards, even the exchange of planning ideas was fraught with danger. In the 1960s, many American schools took to the fad of the 'open' or 'loft' plan – undifferentiated big boxes ... But the generous space-standards which prevailed in the richer American school-board districts gave the concept some plausibility and success [there] (Saint 1987, 211).

Claiming edu-architectural designs as universal solutions and then promoting and selling them is not new. The first sentence of non-architect Lancaster's 1812 *The British System of Education* is an architectural statement and spatial organization was central to all variations of monitorial system. Lancaster's writings and lecture circuits were complemented by the 'very assiduous world-wide public relations campaign of the British and Foreign School Society' (Aldrich 1998, 12) so that this packaged social technology could be said to offer a prototypical 'global form[]' (Ball 2016, 9) of policy.

As discussed, the organization of space is never an autonomous technology since how space-times are labelled (Massey 1994, 14) is also key to hardening spatial organization and shaping what spaces become. Further, McCann and Ward (2012, 45) show how 'references to elsewhere' can help to secure the definition and legitimisation of policy. They *may*, but their effectiveness depends on the relative positions of those elsewheres in a wider 'economy of power' (Ball 1994, 10). Hence, that the open-plan fad was *American* is causally significant. It *matters* that Lancaster's *British System* came after (and edits) Bell's *Madras* system just as, for PTA's sponsor and principal, American, Australian and Scandinavian visions of space held more currency than English ones.

Seeing policy mobility across time and space through a focus on built form and its representations provides a longer view on policy in motion, one that transcends shifts in government and governance and that precedes both mass, publicly-funded education and the professionalization of architecture.

3.3 Spatial Quantity

The definition of architecture adopted in this paper – the organization and form of physical space – emphasizes spatial qualities. However, the brute availability of space is also key and a political tool in its own right. For example, in 2014 the Education Funding Agency in England

reduced new build school area by 15% for secondary and 6% for primary schools (2015, online). Both amount and organization of space matter – as independent considerations but also together since how much space is available bears on the strategies best suited to organizing it. Mulcahy's (2016) discussion on open learning spaces, for example, shows how it is difficult to know whether the benefits and challenges of a particular design arise from the *amount* of space available (in turn extending teachers' and students' possibilities for action), the particular spatial organization involved, or a combination of both. Andrew Saint's account of open plan illustrated a similar challenge: while representations of architectural styles travel easily enough (especially when innovative), important-but-dull information (about space-standards, for example) is devalued because of its epistemological disadvantage in an economy of signs favouring images that are, in an important sense, already abstract and commensurable – there is, as Grosvenor and Van Gorp (2018, 558) argue in relation to architectural imagery, a 'power of the visual in carrying knowledge across borders'.

To understand both 21st century schooling in general and specific building projects, it will become increasingly important to comprehend the economies of spatial quantity and organization, independently and as they interact. Two examples show why. First, the so-called vertical schools that are being designed for Melbourne, London and elsewhere illustrate how the spatial form of schooling changes with high land costs and/or poor, long-term planning. The speed of these changes risks outstripping the production of knowledge both about increased fire and safety risks and broader educational implications. Second, efforts to seek less space-consuming alternatives for schooling play out in unpredictable ways as a consequence of spatially intensive technologies (e.g. school buildings or parts of them) being 'swapped' for digital technologies, in line with a tendency that technology be 'perceived as a solution to spatial crises' (Monahan 2002, 3). The unpredictability arises because only the most obvious functions are swapped. For example, in PTA early planning documents showed that integrated wifi was chosen over a library with the saved space transferred to official learning spaces i.e. those that look like classrooms, not libraries. Libraries and wifi are commensurable and so swappable only if libraries are reduced to information-accessing tools. If libraries serve other roles – or functions that cannot be known *a priori* – these will be lost in the swap. The lack of a staffroom at PTA and briefings by email and podcast to replace staff meetings exemplified a similar spatial-to-digital technology swap. The decisions in this one academy are not typical; they *are* indicative of new responses to the perceived high costs of physical space and time – a recent Guardian article, for example, about reduced staffrooms in new schools in England (Slawson 2018, online) supports the above observations. More research is needed here. Claiming commensurability is political work relying on poorly understood and often hidden 'exchange rates' between physical space (and all that it affords) and technologies hailed as more cost-efficient replacements. However, the hidden politics of these calculations can break out into the open when the denial of physical space becomes so stark it is unavoidable – when schools are closed altogether.

3.4 Closing Schools

Closing schools is not the reverse of building and opening them. A school-in-use becomes embedded in social life from friendships to bus routes to racial divisions and integration to the cost of land. Life grows around schools and so school-closing belongs to a different category of

experience and analysis from school-building. One way to see it more clearly is to adopt the route Gulson (2007, 184) proposed. His analysis of the school-closing and amalgamation practices used to manage the public educational 'market' in Sydney – what he called 'neoliberal spatial technologies' – suggest that future work could fruitfully explore how, as policy instruments, school-building and school-closing are mutually implicated. The importance of school size in terms of student number (e.g. Leithwood and Jantzi 2009) could also be included. 'Spatial technologies' as a higher-level category of spatial organization would therefore be one way to include these important considerations as well as built policy. This would add the political role of procurement, building and architecture to the study of educational space that sometimes exclude them. Finally, De Carlo's linking of the architectural to the urban would help along with Lipman's (e.g. 2011) and others' work on the control of urban space to realize more spatially integrated policy approaches to education where particular scales of space need not be privileged and where the interactions between scales can be explored more fully.

Conclusion

To connect the use of physical space to policy, to show how buildings matter in attempts to govern education, and to offer a workable means for thinking through these issues, this paper drew on Lascoumes and Le Galès' instrumentation approach as a way of challenging the automaticity through which processes of school-building and its spatial organization are often moved beyond analytic focus – or taken for granted altogether.

Looking from the perspective of instrumentation at work – in this case what school-building and architecture do and by virtue of what properties – flagged up the material and semiotic nature of buildings as packaged social technologies employed to do policy: co-ordinating action, steering that action and so providing bases for educational and social stability, planning and control. While those bases constrain action, they also enable it (and in ways which exceed their intentions.) The financial, legal, design and temporal distinctions between who gets to, for example, impose planning restrictions, calculate the spatial budget, shape the design brief and those who later work in the finished building is a structured, encultured and professionalized *order*. In contrast to Mulcahy (2016, 84) then, I suggest there are real asymmetries at play and that ontologies which are theoretically equipped to recognize these (such as but not limited to the realist accounts I drew on here) are advantaged when it comes to explaining how the structured and temporal differences between school-building, architecture and designed spaces matter for understanding how existing physical space is lived and socially-produced space comes into being.

Built policy helps to see how the meanings, constraints and opportunities of the built environment are shaped and when, by whom and with what resources. More precisely, following the instrument of school-building shines a light on the smaller, lived spaces of policy that tend to be neglected in geographical-scale perspectives and the relations between these. The paper therefore argued for the benefit of architectural as well as geographical insights which helped, in turn, to flag up the potential relevance of the times and duration of policy; the mobility of policy through space and time; and the relations between individual spaces, their organizing relations and wider issues of construction and financing. Broadening the focus to include but extend beyond policies as *verbally* privileging texts and discourses towards the role

of space could help to understand better what policy is, and how it can be communicated and instantiated spatially.

The paper was a first, conceptual step in synthesising ideas across studies on space, architecture and policy. I suggest two main directions for further work.

One is to combine the traditional view of school buildings as settings of educational policies with the perspective outlined here to study how they interact and so understand (in)coherences between policy in and policy as buildings.

Finally, where this paper has focused on the properties of school-building and architecture and given examples showing how they have been used to do policy already, more work on how they *could* be used differently (and in the interests of more people) would be useful. For this to happen, broader conversations about school-building are needed – a process that can begin only once we recognize that ‘architecture has become too important to be left to architects’ (De Carlo 2005, 11).

References

- Ahmed, Sara. 2017. *Living a Feminist Life*. Durham, NC: Duke University Press.
- Aldrich, Richard. 1998. ‘Joseph Lancaster and Improvements in Education’. Paper presented at the Lancastrian Bicentenary, Institute of Education, University College London, May 22.
- Architects’ Journal. 2015. ‘#GREATSCHOOLS: Think Tank’. *The Architects’ Journal*. 8 June 2015. <https://www.architectsjournal.co.uk/business/greatschools-think-tank/8687251.article>.
- Atkinson, Paul, Sara Delamont, and William Housley. 2008. *Contours of Culture: Complex Ethnography and the Ethnography of Complexity*. Walnut Creek, CA: AltaMira Press.
- Ball, Stephen. 1994. *Education Reform: A Critical and Post-Structural Approach*. Buckingham: OUP.
- Ball, Stephen. 2007. *Education Plc*. London: Routledge.
- Ball, Stephen. 2016. ‘Following Policy’. *Journal of Education Policy* 31 (5): 549–66. <https://doi.org/10.1080/02680939.2015.1122232>.
- Benade, Leon. 2017. ‘The Evolution of Policy: A Critical Examination of School Property under the National-Led Government’. *Waikato Journal of Education* 22 (1). <http://www.wje.org.nz/index.php/WJE/article/view/558>.
- Bhaskar, Roy. 2011. *Reclaiming Reality*. Abingdon: Routledge.
- Blommaert, Jan. 2015. ‘Chronotopes, Scales, and Complexity in the Study of Language in Society’. *Annual Review of Anthropology* 44 (1): 105–16. <https://doi.org/10.1146/annurev-anthro-102214-014035>.
- Blundell Jones, Peter. 2015. ‘The Development of the School Building and the Articulation of Territory’. In *School Design Together*, edited by Pamela Woolner, 11–31. London: Routledge.
- Blundell Jones, Peter, Doina Petrescu, and Jeremy Till, eds. 2005. *Architecture and Participation*. London: Spon Press.
- Bowker, Geoffrey, and Susan Leigh Star. 2000. *Sorting Things Out: Classification and Its Consequences*. Cambridge, Mass: MIT Press.
- Burke, Catherine. 2014. ‘Looking Back to Imagine the Future: Connecting with the Radical Past in Technologies of School Design’. *Technology, Pedagogy and Education* 23 (1): 39–55. <https://doi.org/10.1080/1475939X.2013.838450>.
- Città Metropolitana di Firenze. 2017. ‘Scuola Che Funziona = Quartiere Che Funziona: Riquilificazione Urbana e Sicurezza Delle Periferie Della Città Metropolitana Di Firenze’. http://www.cittametropolitana.fi.it/wp-content/uploads/2017/02/art_5_c_1_lett_a.pdf.

- Commission for Architecture and the Built Environment (CABE). 2007. 'Creating Excellent Secondary Schools'. London: CABE.
<http://webarchive.nationalarchives.gov.uk/20110118095356/http://www.cabe.org.uk/files/creating-excellent-secondary-schools.pdf>.
- Cuff, Dana. 2012. 'Introduction: Architecture's Double-Bind'. In *The SAGE Handbook of Architectural Theory*, edited by C. Greig Crysler, Stephen Cairns, and Hilde Heynen, 385–92. London: SAGE.
- De Carlo, Giancarlo. 1969. 'Why/How to Build School Buildings'. *Harvard Educational Review* 39 (4): 12–35.
- De Carlo, Giancarlo. 1980. 'An Architecture of Participation'. *Perspecta* 17: 74–79.
<https://doi.org/10.2307/1567006>.
- De Carlo, Giancarlo. 2005. 'Architecture's Public'. In *Architecture and Participation*, edited by Peter Blundell Jones, Doina Petrescu, and Jeremy Till. London: Spon Press.
- De Carlo, Giancarlo, and Franco Bunčuga. 2014. *Conversazioni su Architettura e Libertà*. Milano: Elèuthera.
- Dytham, Siobhan. 2018. 'The Construction and Maintenance of Exclusion, Control and Dominance through Students' Social Sitting Practices'. *British Journal of Sociology of Education*.
<https://doi.org/10.1080/01425692.2018.1455494>.
- Education Funding Agency (2015) *Notes on area guidelines for mainstream schools: BB103*.
<https://www.gov.uk/government/publications/mainstream-schools-area-guidelines/area-planning-for-maintained-schools#building-bulletin-103-area-guidelines-for-mainstream-schools>.
- Erickson, Ansley. 2016. 'Desegregation's Architects'. *History of Education Quarterly* 56 (4): 560–589.
- Ferrare, Joseph. J. & Apple, Michael. W. (2010) Spatializing critical education: progress and cautions. *Critical Studies in Education*. 51 (2), 209–221.
<https://doi.org/10.1080/17508481003731075>.
- Foucault, Michel. 1995. *Discipline and Punish*. New York: Vintage.
- Franklin, Geraint. 2015. 'Designing Primary Schools: Architect-Educator Dialogues'. In *School Design Together*, edited by Pamela Woolner, 55–76. London: Routledge.
- Friesen, Norm. 2013. 'Educational Technology and the "New Language of Learning"'. In *The Politics of Education and Technology*, edited by Neil Selwyn and Keri Facer, 21–38. New York: Palgrave Macmillan.
- Gieryn, Thomas F. 2002. 'What Buildings Do'. *Theory and Society* 31 (1): 35–74.
- Grek, Sotiria. 2009. 'Governing by Numbers: The PISA "Effect" in Europe'. *Journal of Education Policy* 24 (1): 23–37. <https://doi.org/10.1080/02680930802412669>.
- Grosvenor, Ian, and Angelo Van Gorp. 2018. 'At School with the Avant-Garde: European Architects and the Modernist Project in England'. *History of Education* 47 (4): 544–63.
<https://doi.org/10.1080/0046760X.2018.1451559>.
- Gulson, Kalervo N. 2007. "'Neoliberal Spatial Technologies": On the Practices of Educational Policy Change'. *Critical Studies in Education* 48 (2): 179–95.
<https://doi.org/10.1080/17508480701494226>.
- Halliday, M.A.K. 2003. *On Language and Linguistics*. Edited by Jonathan Webster. London: Continuum.
- Hardcastle, John. 2013. "'Photographers Are the Devil": An Essay in the Historiography of Photographing Schools'. *History of Education* 42 (5): 659–74.
<https://doi.org/10.1080/0046760X.2013.816880>.
- Heppell, Stephen. 2016. 'Schola Liberum Is an Entirely Fresh Approach to Learning for All Children'. Heppell.net. 2016. <http://heppell.net/scholaliberum/>.

- Hertzberger, Herman. 1969. 'Montessori Primary School in Delft, Holland'. *Harvard Educational Review* 39 (4): 58–67.
- Hertzberger, Herman. 2008. *Space and Learning*. Rotterdam: 010 Publishers.
- Hood, Christopher. 2007. 'Intellectual Obsolescence and Intellectual Makeovers: Reflections on the Tools of Government after Two Decades'. *Governance* 20 (1): 127–144.
- Jepperson, Ronald. 1991. 'Institutions, Institutional Effects, and Institutionalism'. In *The New Institutionalism in Organizational Analysis*, edited by Walter W. Powell and Paul J. DiMaggio, 143–63. Chicago: University of Chicago Press.
- Kress, Gunther. 2010. *Multimodality: A Social Semiotic Approach to Contemporary Communication*. London: Routledge.
- Lancaster, Joseph. 1812. *The British System of Education*. Washington, D.C.: Joseph Milligan and William Cooper.
- Lascoumes, Pierre, and Patrick Le Galès. 2007. 'Understanding Public Policy through Its Instruments - From the Nature of Instruments to the Sociology of Public Policy Instrumentation'. *Governance* 20 (1): 1–21. <http://dx.doi.org/10.1111/j.1468-0491.2007.00342.x>.
- Lawson, Clive. 2008. 'An Ontology of Technology'. *Techné* 12 (1): 48–64. <https://doi.org/10.5840/techne200812114>.
- Leaman, Adrian, Fionn Stevenson, and Bill Bordass. 2010. 'Building Evaluation: Practice and Principles'. *Building Research & Information* 38 (5): 564–77. <https://doi.org/10.1080/09613218.2010.495217>.
- Leithwood, Kenneth. & Jantzi, Doris. (2009) A Review of Empirical Evidence about School Size Effects: A Policy Perspective. *Review of Educational Research*. 79 (1), 464–490. <http://www.jstor.org/stable/40071172>.
- Lipman, Pauline. (2011) *The New Political Economy of Urban Education*. New York: Routledge.
- Maguire, Meg, Kate Hoskins, Stephen Ball, and Annette Braun. 2011. 'Policy Discourses in School Texts'. *Discourse: Studies in the Cultural Politics of Education* 32 (4): 597–609. <https://doi.org/10.1080/01596306.2011.601556>.
- Mahony, Pat, Ian Hextall, and Malcolm Richardson. 2011. "'Building Schools for the Future": Reflections on a New Social Architecture'. *Journal of Education Policy* 26 (3): 341–60. <https://doi.org/10.1080/02680939.2010.513741>.
- Massey, Doreen. 1994. *Space, Place and Gender*. Minneapolis: University of Minnesota Press.
- Massey, Doreen. 2005. *For Space*. London: SAGE.
- McCaffree, Kevin. 2018. 'A sociological formalization of Searle's social ontology'. *Journal for the Theory of Social Behaviour*. <https://doi.org/10.1111/jtsb.12172>.
- McCann, Eugene, and Kevin Ward. 2012. 'Assembling Urbanism'. *Environment and Planning A* 44 (1): 42–51. <https://doi.org/10.1068/a44178>.
- McCarter, Robert. 2016. *The Space Within*. London: Reaktion Books.
- Ministry of Education, New Zealand. n.d. 'Flexible Learning Spaces in Schools'. <http://www.education.govt.nz/school/property/state-schools/design-standards/flexible-learning-spaces/>.
- Monahan, Torin. 2002. 'Flexible Space and Built Pedagogy'. *Inventio* 4 (1): 1–19.
- Mulcahy, Dianne. 2016. 'Policy Matters: De/Re/Territorialising Spaces of Learning in Victorian Government Schools'. *Journal of Education Policy* 31 (1): 81–97. <https://doi.org/10.1080/02680939.2015.1099077>.
- Mumford, Lewis. (1938) *The Culture of Cities*. San Diego: Harcourt, Brace, Jovanovich.
- Nespor, Jan. 2002. 'Studying the Spatialities of Schooling'. *Pedagogy, Culture & Society* 10 (3): 483–91. <https://doi.org/10.1080/14681360200200155>.
- OECD. 2006. *21st Century Learning Environments*. Paris: OECD Publishing.

- Parker, Jean, and Damien Cahill. 2017. 'The Retreat from Neoliberalism That Was Not: Australia's Building the Education Revolution'. *Australian Journal of Political Science* 52 (2): 257–71. <https://doi.org/10.1080/10361146.2017.1303033>.
- Robertson, Susan L. (2010) "'Spatializing" the sociology of education', in Michael W. Apple et al. (eds.) *The Routledge International Handbook of the Sociology of Education*. Abingdon: Routledge. pp. 15–26.
- Saint, Andrew. 1987. *Towards a Social Architecture*. New Haven: Yale University Press.
- Sayer, Andrew. 2000. *Realism and Social Science*. London: SAGE.
- Searle, John. 1995. *The Construction of Social Reality*. New York: Free Press.
- Slawson, Nicola. 2018. 'Death of the School Staffroom – Lack of Space or Divide and Conquer?' *The Guardian*. 13 March 2018. <http://www.theguardian.com/education/2018/mar/13/school-staffroom-england>.
- Till, Jeremy. 2009. *Architecture Depends*. Cambridge, Mass: The MIT Press.
- Uduku, Ola. 2000. 'The Colonial Face of Educational Space'. In *White Papers, Black Marks*, edited by Lesley Lokko, 44–65. Minneapolis: University of Minnesota Press.
- Watters, Audrey. 2017. 'Education's Online Futures'. *Hack Education*. 13 December 2017. <http://hackeducation.com/2017/12/13/top-ed-tech-trends-online-education>.