Innovative learning environments and new materialism: A conjunctural analysis of pedagogic spaces

Abstract

An OECD research priority, ILEs have been translated into policy and practice in 25 countries around the world (OECD, 2015). In Aotearoa/New Zealand, learning spaces are being reconceptualised in relation to this policy work by school leaders who are confronted by an impetus to lead pedagogic change. The article contributes a conjunctural analysis of the milieu around the redesign of these education facilities. Recognising that bodies and objects entwine in pedagogic spaces, we contribute a new materialism reading of ILEs as these are instantiated in in New Zealand. New materialism recognises the agential nature of matter and questions the anthropocentric narrative that frames the post enlightenment conception of what it means to be human. The decentring of human subjects through a materialist ontology facilitates a consideration of the power of objects to affect the spatial politics of learning environments. The article traces a relationship between the New Zealand strategic plan for Education 2015-2021 and principal conceptions of ILE as the lived spaces of this policy actualisation and the disciplinary/control society conjuncture. Informed by theories of spatial practice, we argue that principals' understandings of "space" are integral to pedagogic approaches within open-plan spaces. A conjunctural analysis can expand the capacity to act politically. By examining the complex conditions of a political intervention, in this case ILEs, we trace the displacements and condensations of different sorts of contradictions, and thus open up possibilities for action.

Keywords: control society, disciplinary society, conjuncture, Innovative Learning Environments, new materialism, spatial relations

Introduction

Embedded in discourses of global capitalism and an associated emphasis on the growth of human capital, the Organisation for Economic Cooperation and Development's (OECD) thrust to promote innovative learning environments (ILEs) aims to inform practice, leadership and reform through the analysis of powerful and innovative examples of learning. ILEs are at the forefront of a conjuncture in Aotearoa/New Zealand education, "a period during which the different social, political, economic and ideological contradictions that are at work in society come together to give [that era] a specific and distinctive shape" (Hall & Massey, 2010, p. 57). This contemporary conjuncture represents a shift from factory models of schooling to the flexible demands of the 21st-century workplace instantiated in ILEs and innovative learning practices.

We cannot divorce educational narratives -the technological, spatial and temporal focus of ILEs, from our wider material global context. Therefore, we embrace post-structural politics to consider how principals mediate and filter their uptake of ILEs in relation to their school philosophies and pedagogical journeys. Twenty-first century knowledge economy discourse, with its attendant emphasis on change, constructs an urgency to "rethink and redefine" education "outputs" (Bengston, 2005, p. 29). In this neoliberal milieu, we witness the rise in the importance of knowledge as capital, which is foundational to globalisation and its related influence on

education policy (Olssen & Peters, 2005). Schooling design is instrumental in this drive to maximise human capital (OECD, 2013). Innovative learning environments (ILE) are a response to this drive for the enhancement of learning as capital across micro level contexts (the institutional learning environment level), meso level relational spaces (networks and communities of practice) and at the macro level (systems). We argue that the current move towards ILEs heralds a conjuncture between disciplinary control associated with modernist approaches to education and modulatory control approaches associated increasingly with the knowledge economy. We also disrupt a binarised approach to ILEs as either about pedagogy or physical arrangements of space, a tension that has been evident in initial responses of educators to the advent of ILEs. For this reason we adopt a new materialist ontology as our theoretical framework decentering the human and adopting a view of the agency of matter. This led us to wonder what sorts of relationalities are produced in ILEs between entangled: objects, spaces, policy discourses, practices, students and teachers. We also wondered how discourse related to the conjunctural shift was being taken up in the thinking of principals, as they work to enact ILEs within their specific school contexts. To address these questions we interviewed a range of principals from Aotearoa New Zealand schools to determine the nature of relations they identify in these new generation learning spaces.

In this article we firstly introduce key ideas related to ILEs and their purpose. We then introduce the notion of conjunctures and argue that ILEs are an example of a conjectural shift between disciplinary control and modulatory control societies. This move problematises ILEs in terms of their political effects locating them as a political instantiation within broader globalisation moves. We then outline a new materialist ontology that we argue disrupts binaries created by the idea of a shift between modernist (disciplinary) and ILEs (modulatory) enabling us to focus instead on the entangled relationalities produced in ILEs. We move between these theoretical ideas to analyse the perceptions of principals we interviewed to learn more about their responses to ILEs in terms of enacting these within their school contexts and re-imagining pedagogic spaces.

Innovative learning environments

Conducted by the Centre for Educational Research and Innovation (CERI), the ILE project gathered 125 examples of 'innovative learning' from more than 20 countries and carried out detailed case study research on 40 of them prior to 2013. In particular, the project targets how education can be innovatively organised at the micro (learning environments) and the meso levels (networks and communities of practice), as well as the strategic implementation of changes in the way learning is conceptualised and targeted at the macro or system level (education system) (OECD, 2013). To target tactical change, the New Zealand Ministry of Education (MOE) have refocused property funding in their Strategic Plan for Education 2015-2019 to align with the OECD initiative to develop ILEs. "The property portfolio is a key enabler of the Ministry's strategic intentions: enabling 21st century learning practices through the provision of innovative learning environments, improving evidence based investment decisions

and increasing efficiencies" (Ministry of Education, 2015, p. 36). The New Zealand MOE Strategic Plan aligns with the earlier 'Statement of Intent' policy document which mandates schooling environments that "provide flexibility for where learning can take place and can be personalised according to each individual's strengths, abilities, languages and cultures" (MOE, 2014, p. 22). Wells (2015) notes provocatively that the architectural community are ahead of the education community in projecting 21st century learning spatial design and questions whether ILEs can be seen as a discursive strategy to leverage change in educator practice. Although there is the need for synergy between architects and educators generated through cross disciplinary conversations (Imms, 2015), developments can be fraught when architects do not fully understand the educational community they are designing for and, as Wells (2015) observes, educators are not future focused enough in their projections for 21st century learning.

In the New Zealand context, the push towards ILEs has accelerated since the release of policy documents with the mandated expectation that all school-based learning environments will become ILEs by 2022 (Ministry Of Education, 2011). This expectation has seen schools knocking down walls between classrooms, combining two classes into one, increased team and collaborative teaching, and shifts towards 'modern learning pedagogy' combining elements of: increased collaboration within and across schools, ubiquitous technology integration, promotion of student voice, targeting learner agency, using Assessment for Learning practices (Hopfenbeck & Stobart, 2015) and integrating curriculum. These elements of modern learning pedagogy were already embedded in New Zealand schools to differing degrees and combinations, however the policy mandate to implement ILEs by 2022 has focused these beyond enactment of the New Zealand curriculum towards a broader re-structuring of schooling.

From disciplinary to modulatory control societies
Educational architect, Prakash Nair (2011), makes the provocation that the single-cell classroom is 'obsolete' because it does not emulate the 21st-century workplace. This statement can be read as a move from Foucauldian (1977) disciplinary societies, where there are techniques of control associated with hierarchical observation, normalising judgment, and an associated self-examination, to Deleuzian (1992) control societies. Deleuze (1992) challenges us to consider Education as a state apparatus within control societies. "Just as the corporation replaces the factory, perpetual training tends to replace the school ... Which is the surest way of delivering the school over to the corporation (p. 5)". The notion of lifelong learning as a key tenet of 21st century discourse addresses both social justice and economic imperatives. So although we should not see Deleuze's comment about the school being delivered over to the corporation in simplistic terms, there is an important point to be made about the businessfication of schooling (Khan, 2008). The shift from the disciplinary to control society can also be seen in the datafication and assessment of education (Thompson, 2016). For instance, the development of digital data infrastructure reflects a "shift from mastery over visible space to the integrated management of information" (Bogard, 2009, p. 19). Considering OECD purposes for ILEs includes an alignment of schools to the needs of the knowledge economy ILEs can be seen as "a new relation of the state to the economy within disciplinary, biopolitical capitalism" (Kelly, 2015, p. 162). Hardt (1998) writes

The walls of the institutions are breaking down in such a way that their disciplinary logics do not become ineffective but are rather generalised in fluid forms across the social field. The striated space of the institutions of disciplinary society gives way to the smooth space of the society of control…. Whereas disciplinary society forged fluid, distinct castings, the society of control functions through flexible, modulating networks… (p. 139).

Deleuze's (1992) notion of the control society (modulation) enables us to grapple with the question of how principals envisage the spatial relations of classroom territories in light of ILEs, as one of the entangled relationalities produced in this new educational assemblage.

Assessment technologies and information communication technologies align with processes of self-regulation that promote learner driven learners (Watkins, Carnell & Lodge, 2007) and of self-regulation and an intensification of responsibilisation (Rose, 1996). That is; through institutionally sanctioned policies and practices, technologies like self-surveillance, self-regulation and self-management are endorsed so that individuals police themselves. The deployment of these 'technologies of the self' (Foucault, 1988) produce practices, identities and discourses that are desired at an official level and acquired in order for individuals to avoid potential censure. These techniques can be seen to afford and constrain individuals within the schooling sector to act in certain ways, regulating their own conduct (Nelson, 2014).

The control society concept is a useful heuristic with which to disrupt "the control mechanisms insinuating themselves into the ways that we are taught, and teach ourselves, to become" (Thompson & Cook, 2012, p. 565). Architectural designs for learning and emerging technologies influence the ubiquitous conception of anywhere/anytime learning. This convergence of design, technology and pedagogy in ILEs reflect our "totally pedagogised society" (Bernstein, 2001, p. 366) where there is the "pedagogisation of everyday life" (Thomson, 2006, p. 324). ILEs are an emerging illustration of the "replacement of disciplinary power by modulatory power", where "education is being seduced by business rationalities" (Thompson & Cook, 2012, p. 565). There is an overlay of the traditional functions of schooling with rhizomatic neoliberal corporatisation that accelerates performativity at all levels of the system. Deleuze extends Foucauldian biopower (a surveilling, centralised and panoptic gaze on and through bodies), with his notion of the control society. Incorporating disciplinarity, modulatory power comprises a focus on massification (Kelly, 2015) and the fluid modulating networks in which we are all immersed. In New Zealand, for instance, modulation of the control society is evidenced in self-managing schools (Department of Education, 1988), with their particular and idiosyncratic charters, educational philosophies and local curricula and ILEs. Policy moves towards ILEs mesh with the ripeness of schools to shift or exhibit both disciplinary and modulatory characteristics. Schools are located in their communities and there have been both deterritorialisation of schooling responsibilities with the dissolution of Education Boards, and a reterritorialisation of the incremental policies of 'control by distance' through self-managing Boards of Trustees (Ministry of Education, 2014, 2015).

In Deleuze's societies of control it appears that we can do whatever we want. A fictitious individuality is pedaled (Kelly, 2015) as well as autonomy to act. Freedom is conceived as a seductive form of modulation that provides a heightened emphasis on technologies and the enhanced surveillance of classroom spaces (Thompson and Cook, 2012). The control society exceeds the Foucauldian disciplinary-biopolitical society that emerged in the late eighteenth century. Control societies enact multiplicitous flows of affect that circulate cultural and social influence on a worldwide scale within and across educational assemblages. An assemblage is the coming together of different kinds of entities, in order to produce something new (Deleuze & Guattari, 1987). ILEs represent an assemblage of architecture and pedagogies that produce something new in the quality and goal of schooling.

ILEs and new materialism

Assemblages can be read as transversal connections of human and non-human objects. Objects themselves are influential and exert agency on other objects and on humans as "agential matter" (Bolt, 2012, p. 3). When we take account of the material, matter matters (Barad 2003). Agential matter is particularly relevant in the case of ILEs where the spatial geography and material objects influence the kinds of social interactions that can occur in schooling spaces. Moreover new material readings of ILE assemblages that include policy, architectural designs and facilities can open spaces for "interventionist possibilities regarding schools' curricular and pedagogic outcomes and goals" (Mulcahy, 2016, p. 81). New material considerations in educational spaces would involve a reconsideration of relationality with a shifted emphasis on human and non-human relationality. Braidotti (2007) highlights the importance of materialism in her critique of anthropocentrism. "Contemporary technologies are not man-centred but have shifted away, towards a new emphasis on the mutual interdependence of material, bio-cultural and symbolic forces in the making of social and political practices" (Braidotti, 2007, p. 4).

Agency in ILE literature (OECD, 2015) is drawn from a humanist/neoliberal ideal where learners as individuals regulate themselves in order to develop knowledge and skills. "Human capital expansively includes the meaning of 'human as creator' who frames knowledge, skills, competency, and experience originated by continuously connecting between 'self' and 'environment'" (Kwon, 2009, p.2). Agency is framed as contextual materiality that is produced in the in-between spaces of bodies and objects in ILEs. Refusing a utilitarian conception of objects and physical spaces, the 'material turn' challenges anthropocentrism. In classroom assemblages, bodies, chairs, tables, lights, and space media interconnect and form transversal bonds. For Braidotti (2011) bodies are nomadic and selfhood is a process of transformation and transversality. She challenges the essentialist nature of constructivism in her embrace of complexity. She presents the concept of nomadism, which is premised on the subject's capacity for difference and associated creative opportunities for new generative transformations.

> Complexity is the key term for understanding the multiple affective layers, the complex temporal variables and the internally contradictory time- and memory-lines that frame our embodied existence. In contrast with the oppositions created by dualistic modes of

social constructivism, a nomadic body is a threshold of transformations. It is the complex interplay of the highly constructed social and symbolic forces. (Braidotti, 2012, p. 33-34)

Taking up new material ontology we consider how material bodies and objects and can be read, as immersed in becomings that facilitate difference (Deleuze, 1968). Assemblages are always in motion and always changing. New materialism, informed by Deleuzian ontology, enables a critique of shifting power relations and an examination of the potency of space and materiality in ILEs. New materialism emerges "as a method, a conceptual frame and a political stand, which refuses the linguistic paradigm, stressing instead the concrete yet complex materiality of bodies immersed in social relations of power" (Braidotti, 2012, p. 21). Power relations in pedagogic spaces comprise affective flows of action. Rather than internalised emotion, affect is openness to movement and flow through encounters. Affect "is the cutting-edge of change" (Massumi, 2015). Objects as entities affect us, prior to and irrespective of our understanding of them (Hoogland, 2014, p. 29). According to Deleuze (1988), objects produce affect. "Because… effort prompts us to act differently according to the objects encountered, we should say that it is, at every moment, determined by the affections that come from the objects" (p. 21). ILEs produce affect before we understand them, their spaces and even pictures of these spaces generate affective intensities that flow through our encounters and shape our thinking.

New materialism ontology challenges the "sad Cartesian legacy" (Shaviro (2011, p. 2) of anthropocentrism and humanism. Shaviro (2011) argues that it is an illusion that "we are alone in our aliveness, trapped in a world of dead, or merely passive, matter."

> [E]ven when we have shaped things into tools, and thereby constrained them to serve our own purposes, they still have independent lives of their own... Things have their own powers, their own innate tendencies... [their] availability…gives them a strange autonomy and vitality. We find that we cannot just use them. We must learn to work with them, rather than against them. We have to accommodate their nature, and their needs, as well as our own. (Shaviro, 2011, p. 3).

Lemke (2015) argues that new materialism aims for a new conception of ontology, epistemology, ethics and politics where the natural world and technical artifacts cannot be reduced to resources for progress, production or construction. "Central to this movement is the extension of the concept of agency and power to non-human nature, thereby also calling into question conventional understandings of life" (Lemke, 2015, p. 4). When considering agency and power in the materiality of ILEs, it is appropriate to engage the notions of space and territory.

Space and territories in innovative learning environments

Space is an organising factor that can in this instance be read as the modernist education project of systematic and progressive improvement. Further, it is an associated modernist conception of schooling reform that the physicality of schooling structures can leverage educational change and economic and political advantage.

> [It is a] modernist idea that building design (here, flexible, open plan) should reflect its

contents ('new approaches to teaching and learning'). As does the idea that space is, or can be used as, a device for changing behaviours and practices. Dominant instrumental and behavioural understandings are effectively instantiated in a realist style of reasoning (Mulcahy, Cleveland & Aberton, 2015, p. 578)

Mulcahy, Cleveland and Aberton (2015) observe that from a "realist worldview, space has an essence [that] can be designed as open, flexible and innovative, qualities which, when harnessed by those within it, can develop "capacities in students for the twenty-first century" (p. 578). When we release the need to determine learning spaces through modernist processes we can encounter pedagogic space as "open, multiple and relational, unfinished and always becoming" (Massey 2005, p. 59).

Just as learning environment metaphors drawn from physical geography include ecosystems (OECD, 2015), landscapes (Clandinin & Connelly, 1995), terrains (Thompson & Cook, 2012), neighbourhoods (Frith, 2015), and even trenches (Grammes, 2011), material metaphors imply a geography of context as an assemblage of relationalities that suggest certain forms of interaction. Deleuze and Guattari's (1987) theory of territories offers an opportunity to consider the nature of learning environments as multiplicitous intensities. For Deleuze "animals and humans group themselves in territories and in doing so create spatial differences on the earth" (Colebrook, 2002, p. 36). Any consideration of the multidimensionality of contexts implies a consideration of space.

From this perspective, classroom spaces are multiplicities. They are not containers or "enclosures" (Thompson & Cook, 2012, p. 569) for always already constituted identities but rather a production of relations where there are "loose ends" and "missing links" (Massey, 2005, p. 12). Classrooms comprise multiplicities - assemblages of bodies, subjectivities, objects, ideas and discourses. As Massey (2005) argues, without space there is no multiplicity and without multiplicity there is no space. "If space is indeed the product of interrelations, then it must be predicated upon the existence of plurality. Multiplicity and space as co-constitutive" (Massey, 2005, p.9). It follows that spatial relations can never be definitive or closed off and therefore spaces are continuously under re-construction, subject to change (Massey, 2005) and unknowable (Healy, Grant, Villafranca & Yang, 2015). Space is a constant becoming in the interactivity of bodies and objects that produce possibilities for difference (Deleuze & Guattari, 1987).

Nevertheless, classrooms that have structured spaces are mapped with furniture and designed with static and predetermined purposes, can be described as territories. Rather than a "cultural container", a territory is a portion of relational space that is bounded, "porous, processual and unstable" (dell'Agnese, 2013, p.122). Territory is not a kind of independent variable in social and political life, rather, following Deleuze, "it is itself dependent on the rhizomatic connections that constitute all putatively territorial organisations, instructions and actors" (Painter, 2009, p. 73). As a spatial concept, territory "lends itself to a focus on place as an assemblage of vibrant matter" (Duhn, 2012, p. 100).

Recently with education discourse turning to projected conceptions of 21st century, and radical changes proposed to traditional schooling structures through policy around ILEs, classroom territories are being rethought. The four-walled classroom has been punitively described as 'single cell' conjuring metaphors of either a very primitive organism or a prison. Another term, "industrial age egg crates" (Hattie, 2003, p. 13), implies normative education conveyances. Politically these metaphors are part of powerful change (21st century) discourse that serve to position traditional classrooms as old fashioned and outmoded. However, shifts to ILEs propose new spatial arrangements to suit goals linked to preparing students for the knowledge economy and corporate working arrangements. A new seductive mode of control is ushered in (Thompson & Cook, 2012) through these aspirational and future-focused discourses of 21st century learning.

A new material lens opens up a consideration of the multiplicitous nature of space in ILEs as an interrelationship of objects, bodies, discourses and ideas. They are therefore more than "polycentric room designs, infused information and communication technologies, flexibility brought about by moveable walls and other agile interior elements, a variety of 'student friendly' furniture, and ready access to resources" (Imms, Cleveland & Fisher, 2016, p. 6). The notion of assemblage enables a consideration of territorial reconfigurations in the current conjuncture. We address this consideration through the analysis of principals' conceptions of ILEs and space and pedagogy reconfigurations later in the paper. In the following section we outline the study on which this analysis rests.

The Study

The etymology of the term conjuncture has its origin in Latin word conjungere, which means to bind together or connect. Marking transitions between different political moments (Hall & Massey, 2010), we take it to describe a rupturing and reassembling during major discursive shifts in education. Conjunctural analyses require a description of the fields of power and consent that are expressed in political, ideological, cultural and economic terms (Hall & Massey, 2010). Rather than attempting to analyse or characterise particular movements in the principal comments, we elect to move to a more epistemological line of inquiry that investigates the theoretical lens through which the move to ILEs is positioned, and this starts from the recognition that education is simultaneously modern and postmodern (Bracke, 2014). As an analytical tool, the concept of conjuncture can expand the capacity to act politically. By examining the complex conditions of a political intervention, in this case ILEs, we trace the displacements and condensations of different sorts of contradictions, and thus open up possibilities for action. This is, as Thompson and Cook (2012) after Deleuze, propose an opportunity to engage with "weapons" that disrupt "the control mechanisms insinuating themselves into the ways that we are taught, and teach ourselves, to become" (p. 566).

Space and territories are the embodiment of the disciplinary/control society conjuncture. In space and territories, objects, humans, ideas and discourses meet and collide. In our analysis we utilise these collisions as analytic constructs. Once we consider possibilities for post anthropocentric agency, central to a new materialisms reading, objects take on a 'more than object' demeanour in

the way that they act upon us; material agency that can be as significant as any human agency (Mulcahy, 2015). Again also, we approach the data through a new materialist frame looking for ways in which material agency is invoked in the perspectives expressed by participating principals. We are particularly interested in the conjuncture of disciplinary/control that link modernist conceptions of learning and materialist readings of ILE affordances.

The research reported in this article is an analysis of the qualitative component of a mixed methods survey involving 165 New Zealand Principals from primary, intermediate and secondary schools. The wider study investigated professional learning in New Zealand schools. The research, granted ethical approval through the University of New England, investigated how New Zealand school principals describe the implementation of ILEs in their contexts. The Principals were contacted initially through an online survey sent to all New Zealand schools and 31 agreed to semi-structured interviews. These interviews were conducted as phone interviews exploring the following questions on ILE:

How do you define innovative learning environments?

What impact do you think these innovations are having on learning?

What impact do you think these innovations are having on teaching?

What impact do you think these innovations are having on school leadership?

The data were thematically analysed commencing with an emic review of the interview comments which involved open coding (Robson, 2011). We also analysed the data for dimensions related to entangled relationalities between space, objects, pedagogy, discourses, teachers and students. We coded the data using Nvivo and achieved consensus within the analysis through ongoing discussion amongst the research team, memo-writing to capture emerging connections within the analysis and collectively discussing the emergent themes in relation to the ILE literature. We present three themes that emerged through this data analysis process: the politics of pedagogic space, spatial territories and 'cultural containers'. These themes were selected on the basis that they highlight the conjunctural shift from modernist class spaces and pedagogic arrangements to the modulatory 21st century learning arrangements of ILEs.

In the following section we present our analysis supported with illustrative quotations from seven of the Principal interviews. The participants (given pseudonyms) are all practitioners in state schools: five primary, one intermediate, and one secondary school leader, three of whom have ILEs in their schools. The following comments were selected on the basis that they gave insightful accounts of ILE spatial politics and classrooms as territories. They are not representative of other school leaders in the data sample, comparisons cannot be made between leaders who are in ILEs and those who are not, nor does this data frame a comparison between secondary and primary implementations of ILE. These are elements that could be investigated in future research. In the following section, we illustrate the disciplinary/control conjuncture through providing accounts from coded data on how the school leaders frame the concepts of

space and territory in their implementation of ILEs.

The politics of pedagogic space

With the intensification of teachers' work, in the New Zealand context, student bodies are surveilled, progress measured and each student is matched to learning tasks related to their prescribed needs. A conjunctural shift to teachers taking responsibility for more than one class of students generated a concern that children might 'slip through the cracks' in ILEs where they could fly under the radar of surveillance made more complex by the massification of teaching and learning.

> *[Teachers] have to make sure that certain children don't fall through the cracks those little fringe dwellers or the ones who like to keep low under the radar and when you move from 30 children in a class to then 60 working together, it's a few of those who can just move to the side and not be picked up. (Suzanne)*

The affective encounter between bodies and objects and bodies together gives shape to the pedagogic moment. Suzanne highlights the important of tracking children in pedagogic spaces through using metaphors of radar surveillance and cracks to frame the disciplinary concern of monitoring bodies. Her comment also implies a 'massification' through ILEs – as a move to inscribe pedagogy from the bodies of 30 to the bodies of 90 students. In the biopolitics of classrooms, teachers monitor and measure to address student needs as a core aspect of their work.

ILEs can function (although not necessarily) with governance from a distance, where teachers do not directly control the regulation of student bodies. In some, there is tight regulation of bodies based on children's daily performances that are closely related to prescribed learning outcomes. In others there may be workshop approaches and both '*must do*' / '*can do*' options operate to enable choice. In the affective flows and escapes of interstitial spaces in ILE, student bodies can be cultivated to be 'free range' knowledge workers (Author & Author, 2017). The teacher has a less imposing physical present with the agency of objects (e.g. furniture design, learning management systems) in the ILE influencing and regulating the bodies within it. The centrality of the teacher in the space as an embodied presence is diminished. Kate raises a tension between pedagogic spaces that promote free-range knowledge workers and the primacy of building strong student teacher relationships.

> *[There was] one that I went into one that I really liked. I could see that the kids had huge relationship with the teacher… I could see the contact happening... I could see continual interaction. The teacher was available to the children. And some of them I've gone into I've seen teachers behind screens or shut off behind windowed withdrawal spaces with a few children and other children outside looking lost. And when you talk to them about their learning, they don't seem to know a lot about it. And I look at our kids and it's really easy for your children to become lost learners because…they need that trust. (Kate –regional state primary)*

This may indicate a tension created in the conjunctural shift between the primacy of relationships indicated in official approaches to curriculum and pedagogy such as New Zealand Curriculum and Tataiako and modulatory approaches associated with ILEs.

The spatial design of the classroom influences pedagogic possibilities. The utilisation of classroom spaces amplify their affective impact (Watkins, 2007).

> *[There] is the fact that kids are not in rows with chairs anymore and the teachers just have to get used to the environment where the kids could be in all these different nooks and crannies around the room and part of their job is to ensure that they're still engaged and they're not just wasting time- so to speak. (Nathan –urban intermediate school)*

Modulatory forms of biopower are inherent in the bodily flows around and through the "nooks and crannies". Nathan's reference to the traditional notion of chairs in rows might suggest a separation from disciplinary force. It is not altogether an accurate binary for primary teaching where group seating arrangements have been ubiquitous for decades, yet it may well be relevant to Nathan's intermediate schooling context. This may also be a reference to the strawman of the traditional classroom. This construction of the 'traditional classroom' claims homogeneity of approach that did not exist but is required to justify and leverage ILEs. It may be seen as an example of 'justifying discourse' that is used to frame the necessity of ILEs to contrast traditional pedagogic arrangements.

Moreover, Nathan's observation highlights how it is important that children are not able to escape the pedagogic gaze –even in "nooks and crannies". It suggests that some students appropriate the affordances of ILEs to suit their own counter-surveillance and counter-performance purposes and that some students struggle to navigate the conjuncture of a shift from conventional modernist class spaces and pedagogic arrangements to the modulatory 21st century learning arrangements of ILEs. It is not only the teachers who have to 'get used to the environment'.

Spatial territories and 'cultural containers'

Marius identified a purpose of pedagogic change facilitated through ILEs as 'de-privatising' teachers' practice.

> *I think that the initial thing as a whole is about moving to de-privatise [teacher] practice and understanding that. In our environment, we have four teachers working in our space all day. So, being open to sharing practice, really developing strong processes around those 'open to learning' conversations to support all the learners, I think is probably a big start. I think getting your mindset away from these are my kids and these are 'my' resources, this is 'my' space to these are 'our' kids, these are 'our' resources and this is 'our' space and, you know, really working in that manner. [This] is something that you need to be aware of I guess. (Marius – newly build urban primary school)*

The disruption of simultaneously expanding the space by knocking down walls and collapsing classrooms into one another, we see evidence of the disciplinary/control conjuncture. Territories

become redefined as multiplicitous and rhizomatic in the relations of teachers to students and to each other in classrooms. No longer can teachers lay claim to one group of students as 'their class' (although some still retain administrative responsibility for a 'base' group) or one space as theirs. Yet, in this re-configured space there is the coexistence of disciplinarity and modulation associated with control. Classrooms become modulatory spaces in which disciplinary effects of sophisticated teacher-peer and student surveillance are superimposed. However, Tane foregrounds an oscillation that appears to occur for teachers faced with adapting to the agency of spaces to influence their work.

> *I think initially they need to be ready to open themselves up a bit warts and all, you know peer appraisal, peer review, team teaching they all sound good but in reality it doesn't happen. They will still go back in their silos and get on and do the job. And most of my teachers - 95% of my teachers do that very well. And they're good practitioners, but that is very much old school. I'm thinking a couple of teachers who have been here for a long time. Highly effective but completely insulated. So, they don't share good practice, they don't peer teach. You know teachers don't get to see them. (Tane –regional coeducational secondary school)*

The walls and objects in classrooms re-frame teachers' and students' territories and what is defined as good practice. Within the modulatory spaces of ILEs teachers who were once deemed effective do not retain this evaluation unless they engage in becoming-teacher as public, collaborative and open for scrutiny.

Carmen acknowledges the need for pedagogical change around the notion of territory. She highlights a teacher shift is needed from disciplinary to modulatory conceptions of territory.

> *… the teachers here like their own space. They like their own environment. My big challenge [as a principal] is who we would put together, who would team up together and that would be very frightening to think about really (laughing)… You got some highly analytical people that do great work in their own space that would be a nightmare mixed with some other people, you know, drive them insane. And there is no point to opening up these big spaces...[and] having teachers recreate little classrooms inside them. You know, that's kind of not the point of it either, so yeah. We have got quite a lot of work to do on thinking about what might look like. (Carmen –urban primary school)*

Carmen identifies a concern that the teachers will reterritorialise within the expanded walls and reconstruct their 'cultural containers' (dell'Agnese, 2013) resisting the agency of the de-privatising practices and arrangements of ILEs as modulatory instantiations. It is apparent that 'flexible' classrooms, as agentic assemblages, necessitate a high degree of collaboration from teachers who work across the same spaces that can even challenge existing norms.

New furniture and technologies as agentic objects influence the students' relationships with each other, their teacher and the space. Ubiquitous access to digital devices, for instance appears to support flexible and open spatial relations for students.

*When I arrived I had the little lift up desks…some of them were as old as I was. So, I chucked them all out…and that changed their world. They moved from being very possessive about their chair and their space and their desk and their box, to saying 'oh, this is **all** of ours, isn't it'? 'We can go anywhere we want to in the room.' …And with their laptops they became much more mobile and they could work in any other space...*

So not only do ILE discourses promote de-privatisation of teachers' work the public furniture and mobile devices necessitate de-privatisation of learning for students also as well as increased mobility and authority for their learning. However, with de-privatisation does not necessarily come relinquishing of teacher control – this may be less visible but still influential.

So, it took [the students] three weeks to say goodbye to it all. Then they were over it and fine. They realised all I need is my laptop. That's all I really need because I can print off anything to share. There were some, you know, I just taught them 'this is all of our furniture'. 'We can move anywhere we want to'. 'We don't have to sit in this classroom unless the teacher requires it and is working with a group and you're in that group'… Children are determining where they go, into which spaces…because we don't need to have them all sitting in front of us. (Gretel – rural state full primary school)

Although Gretel foregrounds the autonomy afforded students in the flexible learning spaces of ILEs, disciplinary discourses still echo in this conjunctural modulatory space. The children are able to move and work anywhere in modulatory spaces "unless the teacher requires" otherwise.

Expanding the capacity to act politically

The conjunctural analysis enables us to ask "are things as necessary as all that?" (Ball, 2013) in order to build the capacity to act politically. Conjunctures have been used in Marxist theory to frame large scale socio-political shifts. Through examining conjunctures, we struggle to avoid being subsumed into the sensibilities, discourses and values that are unquestioningly invested in this 21st century learning landscape and in doing so recognise the conditions that produce us. Crises usually drive conjunctures and it is in moments of major ruptures that 'organic' relations of society are deeply reshaped (Hall & Massey, 2010). With the financial crisis influencing the drive to augment human capital across the globalised world, we see a conjuncture between schooling in the discipline society (Foucault, 1977) and the projection of sophisticated forms of control as suggested in Deleuze's (1992) later work showing up in the advent of ILEs as the preferred form of schooling.

The intensification of global competition in education is evidenced by the increasing global significance of the OECD with its focus on the expansion of the Programme for International Student Assessment (PISA) (Sellar & Lingard, 2014). The filtered-down effect of pressure on nations to perform results in competition between schools and a move towards control society where what is measured is removed from the classroom interactions that produced the data in the first place (Thompson & Cook, 2012). This is alongside the promotion of ubiquitous technology that possibilises new means of control and pedagogy from a distance and the pedagogic

repositioning of teachers and learners. These factors are manifestations of the current disciplinary/control conjuncture that has produced the ILE reform movement and emerge as a concern within principals' perspectives on enacting ILEs. Maintaining an ability to monitor students who fall through the cracks within the massification moves of ILE pedagogic arrangements and relationalities creates new tensions for teachers within broader contexts where they are expected to measure student progress with reliable and robust processes and report this data beyond the school to the Ministry of Education. This is a new intensification and complexification of teachers' work.

Interviews with principals indicated a concern with supporting teachers to adapt to the de-privatised teaching practices and pedagogic spaces of ILEs. Thompson and Cook (2012) make the point that modulatory power associated with control societies does not eclipse disciplinary power but rather overlays and in some cases intensifies disciplinary practices (Thompson & Cook, 2012). Disciplinary apparatuses are resilient in schools. There is the "surveillance of classroom spaces", the "normalising hierarchies of student subjectivities" and the "disciplining of knowledge" (Thompson & Cook, 2012, p. 574).

Different pedagogies require teachers to use their bodies in different ways (Watkins, 2007) within the affective assemblage of classroom spaces. Children, teachers and objects in learning environments are part of a sensorial, atmospheric, corporeal and temporal assemblage that includes objects, times, lights, atmospheres, and human bodies (Knight, 2015). Our analysis suggests that for teachers, ILEs require significant shifts in how they relate to students, colleagues and to their work. Our findings resonate with Watkins (2007) assertion that the body of the teacher has been reframed in 21st century discourse, with its emphasis on student-centred learning, to a "dubious status" within current pedagogic practice (Watkins, 2007, p. 767). Watkins argues the teacher's role has become marginalised in many classrooms and the ways that teachers regulate and use their bodies has been reshaped. "This alters the affective force of the teacher upon the bodies of learners and the capacities this intercorporeality produces" (p. 768). Principals' perspectives indicate that teachers do re-territorialise learning environments as a means of coping, carving out familiar silos in which to re-group. What is interesting in the Principals' discourse is not that teachers do this but that this reterritorialising is presented as temporary and that the only authorised course of action for teachers is to adjust to teaching in ways consistent with ILE discourses.

Pedagogy in ILEs shifts from being a unidirectional information exchange to become a complex series of entangled movements, affects and sensations (Knight, 2015). The interstices of classroom territories are rich with collaborative potential. The bodies, feelings and histories are complex to collapse together in ILEs, yet this is what the deprivatisation of practice requires. The physicality of individual territory ownership is reframed through the assemblage of resources, bodies and spatial demands. Among the principals there appears to be engagement with the agency of objects. The references to 'going back into their silos', indicates a recognition of the agency of spatial re-arrangements that impact on becoming-teachers. Similarly, references to

challenges associated with surveilling students who like to 'fly under the radar' imply the potency of objects and spatial distance in ILEs.

In their review of ILE literature, Deed and Lesko (2015) note that openness in learning environments authorises imaginative re-forming that "is expressed through physical and social unwalling of authority and routine … and disrupts teaching and learning conventions through distortion of form and creating uncertainty about function and meaning" (p. 220). They also note that due to "physical and pedagogical openness", it can be difficult to achieve "coherent pedagogical practice, a shared culture and mutuality between teacher and student learning" (Deed & Lesko, 2015, p. 229). Principals' perspectives indicate that students as well as teachers benefit from deliberate focus on what it means to work collaboratively and to re-imagine teaching and learning in the flexible environments of ILEs. Our findings are commensurate with the Australian study of Campbell, Saltmarsh, Campbell and Drew (2016) who found that the materiality of ILE "disrupted traditional approaches to teaching" and required from teachers a "wider appreciation and empathy for others practising in the space" (p. 220). With "increasing reliance upon teachers' ability to evolve collegial and collaborative work teams, both with fellow staff and students" (Campbell, Saltmarsh, Chapman & Drew, p. 211), there is scope for leaders to lead or at least implement targeted teacher professional learning and development on working generatively in these spaces.

The current impetus to redesign schools in accordance with a vision for 21st century schooling (where "we don't need to have them all sitting in front of us"), illustrates a shift from disciplinarity to modulatory spaces of the control society, where we are 'totally pedagogised' Bernstein (2001), and learning and workforce preparation is intensified and ubiquitous. There is a 'control/ freedom' dilemma that irrupts in the form of managing state control mechanisms in policies around assessment, curriculum, and the property resourcing of specific types of buildings. Yet to maximise the potential of the control society, processes become rhizomatic, where territories are broken down and spaces are shared in the interests of an advanced surveillance society. These deprivatisation moves involve intensified performativity expectations. Therefore, deprivatisation is a challenging aspect of this conjuncture for school leaders and teachers who have been seen as successful in their respective fields to date in more traditional arrangements. Influenced by Massey (2015b), Duhn sums up this reluctance to relinquish territoriality: "There are ontological ties to environments of enclosure which can lead to problematic concepts of a sense of entitlement and belonging to specific spaces" (Duhn, 2012, p. 101).

Conclusion

We are witnessing the deterritorialisation of New Zealand schooling through the reframing of human and non-human assemblages in the interest of "future proofing" education (Newton, Backhouse & Wilks, 2012, p. 2). The deterritorialised classrooms of ILEs require new territorial relations. Ownership of individual territory is reframed through physical assemblages of resources, bodies and spatial demands. The primacy of the teacher body is decentred and

displaced in a process of massification - of not only classrooms, but schools globally, in service to 21st century workplace agendas. Although policy makers, architects, designers, school leaders, teachers and, in some cases, students create spatial designs, the dynamism of these spaces are coproduced though the complex affective flows of human bodies, acoustics, airflow, textures, lighting, furniture and non-human creatures. In the conjuncture, the control society overlays systems to intensify some aspects of disciplinary control. As pedagogic assemblages, the material cartographies of classrooms reflect a shift to the influence of the control society.

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