LIVING IN THIS SPACE:

CASE STUDIES OF CHILDREN'S LIVED EXPERIENCES IN FOUR

SPATIALLY DIVERSE EARLY CHILDHOOD CENTRES

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Abstract

Consistent with international trends, many children in Aotearoa New Zealand (NZ) spend the majority of their waking day in an early childhood centre [ECE]. Drawing on children's and teachers' perspectives in four spatially diverse, all-day ECE centres in NZ, this study investigated the relationship between ECE centre built environments and children's lived experiences in light of characteristics of 'child-friendly' environments (Chatterjee 2005, Kennedy, 1991). Situated at the intersection of children's geography and childhood sociology, this thesis used case-study methodology to foreground the experiential aspects of children's spatial interactions, including their feelings of wellbeing and privacy, their mobility and social interactions. Conceptually, this study draws on a constructionist paradigm derived from Lefebvre's (1991) theorisation of space as a product of the social-material relations, and from his notion of rhythmanalysis (2004); combining the two Lefebvrian concepts with Gibson's (1979) theory of affordances provides a novel approach for understanding the agency of children and teachers in the process of the production of space. Research strategies were primarily ethnographic and included naturalistic observation, video records, child-led tours, photography, bookmaking, spatial mapping, focus groups, and measurement of noise levels. The findings revealed that space and its materiality matters for children's lived experiences as well as for children's and teachers' agency. Opportunities for child-friendly lived experiences were influenced by the extent to which diverse rhythms and activities could coexist harmoniously in each physical space, with larger and more complex spaces offering greater affordances. The size of each centre's activity space added a layer of dynamics to spatiality by narrowing or expanding these opportunities. Additionally, open-plan space afforded highly mobile younger children opportunities to exercise agency through collaboration. The rules and norms that governed children's spatial practices were influenced by teachers' decisions and actions and these were enabled or constrained by spatial affordances. My findings suggest that, in addition to the 'iron triangle' of adult:child ratios, group size, and qualifications, space is an affordance that can create the conditions for quality practices, rich lived experiences, and teachers' and children's agency. A number of theoretical, conceptual and empirical

contributions are made to our understandings of young children's lives in group based ECE settings.

Keywords*:* early childhood centre built environments; childhood; children's agency; early childhood education; ethnography; lived experiences; production of space; socio-spatial practices; rhythms; mobility; social interaction; teachers' agency; wellbeing; qualitative case study.

Acknowledgements

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CHAPTER 1

INTRODUCTION: DOES SPACE MATTER?

It's *"not really got space for sitting. My couch at home has. It can fit
mummy and daddy and my cat and me …"*
(Abby, 4 years old)

Why research indoor space and children's lived experiences?

In Aotearoa New Zealand (NZ) children and adults regularly spend up to 10 hours a day together in early childhood education (ECE) centres, the majority of a child's waking day.[1] The built environments of these centres reflect historical factors in the growth of ECE provision and they range from residential villas transformed to accommodate ECE centres, to purpose-built modular buildings with a series of 'single-cell classrooms'. Yet it is unclear how differences in spatial design influence children's lived experiences, and if such differences actually matter.

My research was initially prompted by concerns that NZ's minimum standard for the size of indoor activity space[2] in ECE centres compares poorly internationally. NZ's minimum standard is 2.5m[2] per child (New Zealand Government, 2008, Schedule 4) and this size is 31st (lowest) out of 36 OECD countries reported (OECD, 2011b, p. 50). Finland and Italy are near the top with 7 and 7.5m[2] per child respectively. Canada and Scotland's 3.5m[2] per child are close to the OECD average of 3m[2] for older children and 3.5m[2] for younger children across all types of centres and 3.6m2 for all-day ECE centres (pp. 46-50). However, since "the full impact or effects of physical aspects of space remain unclear" (OECD, 2011a, p. 157), the consequences of NZ's relatively low standard for the amount of space are unclear (see also Farquhar, 2003; Huntsman, 2008; White & Stoecklin, 2003).

In addition to size, little is known about how differently configured activity spaces influence children's lived experiences in ECE centres. Although there are some examples

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1 In NZ, 32.7% of children enrolled in ECE spend more than 30 hours in centres (Ministry of Education, 2017c)

2 As defined by New Zealand's Education (Early Childhood Services) Regulations 2008.

of activity spaces that have been configured to support small group interactions and provide children privacy (e.g., Bartlett & Gandini, 1993; Vecchi, 2010), there is virtually no research about how such spatial configurations impact on children's lives in the centres. In NZ, a Children's Commission inquiry into non-parental education and care of infants and toddlers in ECE centres (Carroll-Lind & Angus, 2011) has identified that both a lack of physical space *and* poorly configured space impacted negatively on children's experiences in some centres. The report found instances where children: could not access quiet space; their play was regularly disrupted by the flow of 'people traffic'; and where toddlers were 'jostled' and babies lacked the spatial freedom to move in small spaces (Carroll-Lind & Angus, 2011, pp. 157-158). Despite these concerns, the size and configuration of centre's activity spaces were not reported in this study. Additionally, health researchers and advisors in NZ have raised concerns about poor health, the spread of diseases, and excessive noise in some ECE centres (Bedford, 1999, 2008; Bedford & Sutherland, 2008; McLaren, 2008; McLaren & Dickinson, 2005). Although raising concern about the size and configuration of space in some centres, these reports present a relatively static view of space that does not tell us much about how spatial size or layout interacts with children and teachers' negotiation and use of space, mobility, or agency while *living* in such spaces over the course of days and weeks.

It is unclear why there is a paucity of research about how physical space impacts on children's lived experiences (for example, through noise, flow, and mobility). One possible reason is that NZ ECE discourses over the past three decades have tended to be dominated by concerns about funding, teacher qualifications and salaries, and teacher-child ratios (Pairman, 2012). These concerns are consistent with international trends (e.g., Fenech, 2011) and may reflect the paradigm shift towards socio-cultural and social constructivist approaches to learning which place greater emphasis on relationships between adults and children than on physical space and "the factors that once occupied researchers' attention … are now seen as subsidiary to this pedagogical and relational emphasis" (Dalli et al., 2011, p. 25). This trend has not been without its critics and, for example, Alan Prout (2005) has argued that accounts of the 'socially constructed child' have been too narrow in their focus on human action and have privileged a discourse that is silent or vague about materiality. However, the importance of space and its interaction with the lives of children has gathered some recognition in recent years,

particularly in relation to school age children and youth (e.g., Holloway & Valentine, 2000; Holt, 2011; Horton & Kraftl, 2005). These arguments are elaborated in Chapter 3.

However, these same paradigm shifts have also been evident in the school sector where, in contrast to the ECE sector, there has been a growing interest about the role built environments can play in student's autonomy as so-called '21st Century learners'. A small body of literature has developed about 'Modern Learning Environments', or 'Innovative Learning Environments' (Dovey & Fisher, 2014; Malinin & Parnell, 2012; Parnell & Procter, 2011; Woolner, Hall, Higgins, McCaughey, & Wall, 2007) and the NZ government has recently developed policy that requires state schools to comply with guidelines for the design of 'Innovative Learning Environments' when renovating existing schools or building new schools (Ministry of Education, 2017a). This policy is in stark contrast to with the government's relatively 'hands off' approach to building design in the ECE sector where planning and design are left to a free-market that operates within minimal regulatory standards.

In summary, research that examines relationships between NZ ECE centre indoor built environments and children's experiences is important because; (i) there is a lack of evidence to support the existing regulation of minimum standards for the amount of space in ECE centres in OECD countries; (ii) despite concerns that small size and poor configuration can negatively impact on children's activity and health (e.g., Bedford, 1999, 2008; Bedford & Sutherland, 2008; Carroll-Lind & Angus, 2011; McLaren, 2008; McLaren & Dickinson, 2005), there is a lack of research about how these spatial factors impact on children's lived experience, including children's negotiation and use of space, mobility, and agency while *living* in ECE centres over time; and (iii) there is a lack of policy leadership about ECE centre design from government or from within the ECE sector, especially when compared to schools.

Personal motivations for this research

My interest in ECE built environments arose through my work as an ECE teacher, professional development facilitator, advisor on the establishment of ECE centres, and as a policy analyst working on NZ's ECE regulatory review in the mid-2000s. Through these roles, I was exposed to a range of situations in which built environments seemed

to play a role in shaping decisions about centre practice. My interest had its genesis in 1981 when, as a teacher trainee, I spent time in a diverse range of early childhood centres and wondered why teaching practices and the organisational aspects of daily life differed so much from centre to centre. While diverse centre cultures clearly arose in response to the interests and values of the families, teachers, and owners, some differences seemed to be influenced by the built environment. During my subsequent years as a teacher, I reflected on the way physical space shaped some of my own practices and experiences. For example, I remember staffroom discussions about whether to close some peripheral rooms when 'early shift' teachers went home in order to 'supervise' adequately. When working in a two-storied house with 25 children (aged six weeks to 5 years), I recall the complicated logistics needed to move children upstairs after their sleep and the dilemmas we faced about how to 'staff' the downstairs when there were only one or two children wanting to use the downstairs space.

My later work as a professional learning facilitator also provided opportunities to observe how differently the same built environments were used by different groups of children and teachers over time and the degree of control that teachers had over the use of space. The types and arrangements of furniture changed, the use of particular spaces for staff rooms and 'sleep rooms' changed, as did the use of particular spaces for different age-groups. It seemed to me that the size and configuration of built environments enabled and constrained some practices, although it was not possible to pinpoint why and how this occurred. These experiences led me to a desire to explore the relationships between built environments and children's experiences in a deeper and more systematic way – hence this research.

Finally, in the 1980s I worked in a context where teachers often had the freedom to change the physical aspects of what were rather 'make-do' built environments. For example, I remember hearing about a group of teachers who, after deciding that an interior wall should be removed to create better flow, simply discussed their idea with the parent committee, hired a chainsaw, and did the work themselves over a weekend – an approach that would now be considered both dangerous and illegal. Most recently I have been struck by how haphazard the approach to ECE centre design remains, even in this historical period when 'purpose-built' chains of ECE centres are common, and when teachers in an increasingly privatised sector appear to have fewer opportunities to

change the physical environments they work in.

I am cognisant of challenges from a number of children's geographers who argue that childhood research needs to be more relevant, purposeful and engaged in policy and weighty contemporary issues (see Horton & Kraftl, 2005). My later role as a policy analyst examining the regulation of ECE centres emphasised the potential for research to support and guide policy design. So, although my research is focused on children's lived experiences (and their micro-geographies), its findings explicitly speak to "the wider processes, discourses and institutions to which these [experiences] connect" (Ansell, 2009, p. 191).

Research Questions

To examine how indoor physical space interacts with children's lived experiences I drew on children's and teachers' perspectives to investigate the following research question:

What is the relationship between the size and spatial configuration of ECE centre 'indoor activity space'[3] and young children's lived experiences?

I used two further sub-questions to guide my research:
   a. How do children occupy indoor activity space, transform it, and engage socially in spatially diverse ECE centres?
   b. How do teachers' conceptions of indoor space and their conceptualisations of children shape children's lived experiences in all-day centres?

My research questions focus on children's *lived experiences* in spatially diverse *built environments.* The following sections provide a context for this research by describing types of ECE built environments and explaining how, using a spatial lens, the notion of lived experience is understood and explored in this thesis. Since these contexts help to further justify my research questions, I have repeated my questions before outlining the thesis at the end of this chapter.

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3 As defined by New Zealand's Education (Early Childhood Services) Regulations 2008. My focus is on indoor, not outdoor space, as it is under-researched. I have also tried to maintain a holistic approach by capturing children experiences as they move between the indoors and outdoors. This approach is elaborated in Chapter 4.

Built environments and lived experiences: a context for this research

Types of ECE built environments

Internationally, ECE centres are situated in a range of building types. Particular educational philosophies or pedagogical approaches are evident in the design of some of these spaces (Kraftl, 2006). For example, Fredrick Froebel's philosophy of self-initiated play is associated with open-plan classroom design where materials are clearly displayed and children play and explore materials within sight of a teacher (Kayser, 2012). Rudolf Steiner's emphasis on children's spiritually and the notion of therapeutic environments influenced the design of buildings that were "liberated from the right angle" (Dudek, 2000, p. 64); in part, this was because curves were seen to better 'embrace' young children (Day, 2004). Recent trends include a move towards 'green' buildings in which children can learn how energy is generated. These buildings tend to use materials such as wood and mud and merge demarcations between indoor and outdoor spaces (Kayser, 2012).

In larger centres that cater for 50 – 150 or more children, the physical layout of the entire building and children's mobility within the buildings may also reflect particular pedagogical approaches. For example, developmental learning theories and a concern for children's well-being are both evident in American designer Anita Olds' (2000) seminal *Child Care Design Guide*. In this guide, Olds advocates for buildings that create a sense of homeliness and intimacy and that are "developmentally appropriate" (p. 7) and suggests that these characteristics are achieved through modular building designs that include distinct home-bases for small groups of similar-aged children in addition to a common core of shared facilities such as kitchen, dining and living areas. Although the overall building may be spatially complex in this model, the indoor *activity space* (or home base) that an individual child can *freely access* usually comprises of a single open-plan room (e.g., Olds, 2000, p. 128).

Designs in which children's mobility is restricted to a single open-plan room differ to the approach taken in the Italian region of Emilia. As advocated by Olds, ECE centre in Reggio Emilia are influenced by developmental approaches and children are separated

into age-related groups, each with their own home-base. However, because ECE in Reggio Emilia is also underpinned by relational pedagogy whereby children are viewed as constructors of knowledge within the *social layers* that surround them (Gandini, 1998a), centres are designed to facilitate "encounters and exchanges between children, children and adults, and among adults" (Gandini, 1993a, p. 116). Consequently, children's home-bases in some centres comprise of clusters of connected rooms that are separate from, but interconnected to, other clusters through a large common space similar to the idea of a city square (piazza) (Malaguzzi & Vecchi, interview, 1992, as cited in Gandini, 1998a, p. 172). Further, because children are viewed as competent and small group interactions valued, each cluster of rooms includes small private rooms for intimate social exchanges among children (Bartlett, 1993).

Although different philosophical and pedagogical approaches are evident internationally, distinctions can be drawn between four broad configurations of ECE built environments as follows: (i) smaller open-plan buildings with few or no internal walls (such as community halls, or traditional NZ kindergartens); (ii) adapted residential houses with multiple rooms (such as traditional NZ all-day centres); (iii) large modular buildings that include a series of self-contained open-plan classrooms (Moore, 1987, p. 51 see also Dudek, 2000; Olds, 2000) (common among some corporate owned chains of ECE centres in NZ); and (iv) large buildings comprised of *clusters* of visually connected rooms interconnected through transitional spaces such as courtyards, pathways, or piazzas (e.g., C. Edwards, Gandini, & Foreman, 1998; Moore, Piwoni, & Kennedy, 1989). In larger centres (as in iii and iv above), children tend to be separated into a number of similar-age groups, each with unrestricted mobility to either a single open-plan 'classroom' or a small cluster of interconnected rooms, but not the entire building.

In open-plan 'classrooms' in particular, furniture is commonly used to divide space into distinct areas such as blocks, book, and art areas. This arrangement has been described as *modified* open-plan design (Moore, 1987; Olds, 2000) and is underpinned by assumptions about the need for constant supervision while allowing children to experience independent mobility (Moore, Lane, Hill, Cohen, & McGinty, 1994; Olds, 2000). However, even within the assumed freedom of such spaces, children's mobility

has been found to be restricted at times (e.g., Gallacher, 2005; Rutanen, 2017; Stephenson, 2009b). Concerns about supervision may play a role in the configuration of space in newly designed NZ centres where modular models with open-plan 'classrooms' tend to dominate. Although dated, multiple studies in contexts where 'visual surveillance' was considered important led Wolfe and Rivlin (1987) to state that:

> ...in every one of the settings we have studied, the schools, the day-care centers, and psychiatric hospitals, children have virtually no time or space ...to which adults can be denied access. Often liability is cited as a reason for such surveillance. (p. 105)

A trend of rising concern with risk and surveillance in the past two to three decades (Disney, 2013; McIntosh, Punch, Dorrer, & Emond, 2010; Nimmo, 2008; G. Valentine & McKendrick, 1997) is discussed further in Chapter 7; suffice to say here that children are able access to rooms where they can be out of adults' sight in ECE centres in some countries but not others, suggesting that attitudes to surveillance are affected by culture, conceptualisations of childhood, and pedagogical approaches. These considerations contributed to my interest in examining children's lived experiences that included how children negotiated space, experienced privacy and so on.

Finally, despite some examples of intentional and thoughtful design, such as those in Reggio Emilia, Architect Mark Dudek (2007) has argued that in most cases there is a gap between pedagogical visions influenced by understandings of childhood, and the design of ECE spaces, with designs remaining "predominantly guided by rules and regulations" (p. 10. See also Dudek 2005; 2000) an argument that Bedford and Sutherland (2008) have suggested applies to many approaches to ECE centre design in NZ.

What is indoor activity space?

Within this thesis, I examine children's lived experiences in the indoor space that children can freely access. I use NZ's regulated meaning of indoor activity space, namely the *physical* (measurable) space that is available for play. In NZ, as with other OECD countries, activity space is defined in legislation and excludes "...passage ways, toilet facilities, staff rooms... and other areas not available for play" (New Zealand Government, 2008, Schedule 4). Although some ECE research focuses exclusively on *either* outdoor or indoor environment (Änggård, 2013, 2015; Greenfield, 2007; Melhuus, 2012; Rutanen, 2012), others have paid attention to both spaces, including their

interaction (e.g., Stephenson, 2002). I have tried to maintain a holistic approach by adopting a primary focus on *indoor* space, while also capturing children experiences as they move between the indoors and outdoors. This approach is elaborated in Chapter 4 where I also explain how key differences in built environments informed my selection of case study centres.

I now turn to the second focus of my research and I explain how lived experiences are understood and explored in this thesis using a spatial lens.

Lived experience in the context of this thesis

Lived experience refers to the immediate, pre-reflective consciousness of life, or the actuality of life (van Manen, 1997). Rather than being other people's representations of experiences, lived experiences are first-hand, situated, 'in-the-moment' subjective activities and encounters. Phenomenology has its genesis in the aim of understanding lived experience and by aiming to capture subjective everyday realities from a first-person point of view as far as possible.

Phenomenologist Maurice Merleau-Ponty (1908-1961) viewed the body as the primary means through which we understand the wider world, that is – through perceptions rather than thought (Landes, 2015; Merleau-Ponty, 1962). Merleau-Ponty's view contrasted with the dualist ontology of mind versus body that had been espoused by Descartes (1596-1650) and draws attention to the idea that humans are embodied in the wider world. The notion of human's embodiment in particular contexts has contributed to bringing a spatial lens to the idea of lived experience (McCann, 2015) and suggests that, although subjective, lived experiences arise within particular social, cultural and spatial contexts and are therefore influenced by those contexts. For example, a child's subjective experience of being on the floor at a group 'mat-time' in an ECE centre includes how the floor feels on her body and how the sounds, smells, and movements of people and things in the space feel to her. The ways she experiences these things arise, in part, from her own meaning-making and her subjective experience may or may not resemble the teachers' representations of, or intentions for, 'mat-time'.

Exploring lived experiences enabled my research to remain open to the affective and performative aspects of children's spatial interactions, including children's feelings of well-being or privacy, as well as their mobility and social interactions. Educationalist and philosopher David Kennedy (1991) has described the dialogue with children's lived experiences as providing a basis from which we can design architectural space that is responsive to children and aspects of lived experiences can be linked to characteristics of environments that Kennedy (1991) has identified as being 'child-friendly'; these characteristics were significant for my research and are described in Chapter 2.

Since lived experiences are understood to be spatial, relational, performative and affective, children's lived experiences in this thesis have been examined through (i) children's feelings of well-being, including experiences of privacy, rest, crowding, or noise (affective); (ii) their actions and mobility in space (performative); and (iii) their social experiences and relationships (relational). These lived experiences overlap, for example, children's feelings of well-being may overlap with their experiences of social relationships or their actions in particular spaces.

The significance of space for examining lived experiences

Physical space does not determine lived experiences; rather, it plays a role in social life as a context for, and product of, social life. Geographer Edward Soja (2009) describes space as "…an active force shaping human life" (p. 2) with social, real, and produced aspects. Three key principles about space that I have found significant for exploring lived experiences have been articulated by Soja (2009). These are: (i) that "we are all spatial as well as social and temporal beings … [ii] space is socially produced and can therefore be socially changed …; and [iii] the spatial shapes the social as much as the social shapes the spatial" (p. 2). These principles mean that, while the physical dimensions of space matter (and are a focus of this research), I need to understand the kinds of human and material relations that physical space enables, constrains, or invites to gather a more nuanced understanding of children's experiences in built environments.

Because lived experiences are subjective activities and encounters that I could only hope to partially capture, the lenses I used to examine children's experiences were influenced

the ways I conceptualise childhood and children. These conceptualisations shaped my notions of what counted as quality, or 'rich' experiences and influenced everything from the questions I asked children to the study's theoretical framework which is discussed in Chapter 3.

Conceptualisations of children and childhood: lenses for examining lived experiences

In 1990 Alison James and Alan Prout articulated a "new paradigm" for thinking about childhood that conceptualised children as social actors who are active in shaping their own lives and the lives of those around them, as well as being shaped by their circumstances (James & Prout, 1990). I situate myself within this new paradigm, although not uncritically. Known as the 'new' sociology of childhood this reconceptualisation emerged from the work of sociological and anthropological researchers who made an explicit move away from developmental psychological approaches. Developmental approaches had positioned children as *becoming,* rather than *being* a capable social actor in his or her own right (Qvortrup, Bardy, Sgritta, & Wintersberger, 1994). The notion of children as social actors is now well recognised within childhood studies with developments since the 1990s tempering the tendency for dualisms that arose as part of this shift (Prout, 2005, 2011). I elaborate on these dualisms in Chapter 3, for example, the way descriptions of children *being* versus *becoming* can constrain research narratives (Mannion, 2007; Uprichard, 2008; Waller, 2006).

The view that children are social actors has influenced my theoretical approach and research methods. For example, the sub-questions that guided my research foreground children's lived experiences by asking *how* children occupied or transformed space. In addition, my theoretical perspective adopted a social constructionist approach that seeks to embrace children's contributions to the production of space. I elaborate these theoretical ideas in Chapter 3. Finally, consistent with a view of children as competent beings, I chose research methods that attempted to capture children's voices by both observing children and working directly with them. I explain these methods and my reasons for choosing them more fully in Chapter 4. As I am aware that children are not isolated social actors, I have also included a focus on teachers to help explain children's agency as an intergenerational phenomenon (Kraftl, 2013).

Lived experiences have been studied predominantly through phenomenological theoretical frameworks. Since my study sought to specifically to examine lived experiences in relation to space, I looked towards social constructionist theorists, particularly French philosophers Henri Lefebvre (1991, 2004) and Michel de Certeau (1984) to add a spatial lens to everyday life. These theorists' insights into lived experiences build upon and complement phenomenological approaches. For example, Lefebvre (1991) viewed lived space, a dimension of his spatial theory, as the grassroots of social space because it is the dimension felt and experienced by inhabitants (such as children) through their everyday lives (see Chapter 3).

The significance of children's agency for examining lived experiences

As I have explained, a conceptualisation of children as social actors drew me to consider how children themselves used and transformed space, and how children's spatial agency affects their opportunities to participate in, and contribute to, the construction of the social space in which they live (Seymour, 2015). Agency and dependency are frequently viewed as opposite ends of a continuum. However, rather than agency being a characteristic that is "within and integral to individual people" (Alderson, 2001, p. 24), and dependency being a state of powerlessness, I was interested to explore how agency and dependency arise from their interaction with each other (see also Alderson, 2001; Guo & Dalli, 2016; Hodder, 2014; Prout, 2000). In particular, my focus on space and the interactions between materials, bodies, and social interactions within the child's sociocultural environment, leads me to pay attention to the extent that children's bodies are "inextricably interwoven with other aspects of the *material* environment" [emphasis added] and emerge as "hybrid entities" (Prout, 2000, p. 2 see also Ingold, 2011; Kraftl, 2013; Mannion, 2007). While structures such as age, poverty and socio-cultural factors can constrain people's agency, so can spatial relationships. In relation to agency, Klocker (2007) has distinguished 'thick' and 'thin' agency as endpoints of a continuum "along which *all* [original emphasis] people… are placed as actors with varying and dynamic capacities for voluntary and willed action" (p. 85). Klocker's (2007) distinction attempts to avoid a dualism between structure and agency by conveying the sense that agency is influenced by the "… 'layering' or 'eroding' effects of a multiplicity of factors" (p. 85). 'Thin' agency refers to decisions and actions carried out in highly restrictive contexts,

whereas 'thick' agency refers to contexts in which a person has a "broad range of options" (Klocker, 2007, p. 85) available to them. In the case of children in ECE centres, my aim was to explore how these factors could include spatial relationships among bodies, physical space and social interactions (as well as the more commonly recognised structural factors such as age, gender and culture).

Distinctions in agency have also been drawn between children as social actors, who participate in social life, and children as social agents whose participation makes a difference to social life (Mayall, 2002). When applied to space this idea can highlight differences in situations when children are "*involved* in changing spatialities and when they can be shown to have *constructed them*" [emphasis in original] (Seymour, 2015, p. 148). Examining children's use of space, teachers' conceptualisations of space, and children's responses (and possible resistance) to these conceptions, can illuminate the extent of children's agency (Seymour, 2015), and how, for example, it is thickened or thinned to use Klocker's terms. Further, by casting agency in a spatial light, I intended to examine how (and why) children "are more or less able to exercise agency in particular circumstances and in particular spaces … [and refocus] attention on the young-child-in-environment, rather than trying to separate the two" (Gallacher, 2016, p. 128). This approach can help to reveal the "potentials for children's agency, actions or perspectives" within the process of the production of space (Hackett, Procter, & Seymour, 2015, p. 4).

These understandings of agency have influenced my theoretical approaches and the framing of data collection and analysis. For example, understanding that agency arises from an *interplay* between children, materials, space, and other people, and can be 'thickened or thinned' through this interplay, pointed me towards theories that would support the close examination of, not only how children contribute to the production of the social space, but also how aspects of the social-material interplay influence children's and teachers' agency. Agency is discussed further in Chapter 3.

My examination of children's *lived experiences* in spatially diverse centres also rests upon implicit notions of 'quality' – what does it mean to have a good life as a child in an ECE centre? Bearing this in mind I explain how I approached notions of quality in

relation to lived experiences in this thesis.

Notions of quality: lenses for examining lived experiences

Although the quality of ECE is a priority policy area for many Western governments, the notion of quality is not unproblematic (Dalli et al., 2011; Fenech, 2011; Melhuish, 2001; Melhuish & Moss, 1991; Pence & Pacini-Ketchabaw, 2008). In positioning 'childhood' as a social structure that exists in a similar way to gender and class (see Qvortrup et al., 1994), childhood has been subjected to a relativist and culturalist gaze (Prout, 2011). This has led to shifts in the way the character of childhood is conceptualised (from being understood as a stable and universal state to more fragmented and fluid conceptualisations) and also to shifts in how 'quality' is conceptualised. Quality in ECE is has tended to be discussed from the point of view of two related lines of scholarship: philosophical discourses about the contested notion of quality itself (what counts as quality) and research that seeks to measure structural features that create conditions for quality practices (such as responsive interactions between children and adults) or that effect change (Dalli et al., 2011).

Philosophical discourses have led to the understanding that quality is a relative concept based on social and cultural "values, beliefs and interests, rather than on objective an universal reality" (Moss & Pence, 1994, p. 172). This social constructivist orientation, together with an understanding that lived experiences are subjective, means that quality experiences cannot be universally defined and are instead embedded in practice and in the realities of the children, families, and communities involved (Dahlberg, Moss, & Pence, 1999; Pacini-Ketchabaw & Pence, 2011). This means that the quality of affective lived experiences (for example, feelings of well-being) is both subjective and relative.

In my research, I have responded to the relative nature of 'quality' by utilising theories and methodologies capable of drawing on multiple perspectives. This led me to include a variety of children and adults' subjective 'voices', as well as some objective measures to assess noise levels, the size of spaces in order to create as rich an understanding of space as possible. Since research demonstrates that licensing standards in western countries (particularly in relation to adult:child ratios, group size, and qualifications) make a positive difference to the quality of care experienced by children (e.g., C. Howes,

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Phillips, & Whitebook, 1992; McGurk, Unit, Mooney, Moss, & Poland, 1995; Ochiltree, 1994; Phillips & Howes, 1987), researchers involved in the second line of scholarship have sought to measure structural features that *underpin practices* that are valued in particular cultures (Smith, Grima, Gaffney, & Powell, 2000).

Researchers have found that key components of structural quality are inter-related (Phillips, Mekos, Scarr, McCartney, & Abbott–Shim, 2000), and also interact with 'process' elements of the environment, such as adult-child interactions. In relation to the quality of built environments, some studies have used rating scales to assess ECE centre physical environments based on research about children's experiences in, and children's use of, particular spatial contexts (e.g., Moore & Sugiyama, 2007). This research is discussed in Chapter 2, suffice to say here that the practice of rating discrete aspects of the physical environment has been criticised for de-contextualising assessments of 'quality' from the culture and the experiences valued within individual ECE centre communities (Fenech, 2011).

The tendency to de-contextualise the quality of children's lived experiences means that rating scales offer a narrow perspective. I had initially considered incorporating rating scales into my mixed methods approach as a way to gain a 'top-down' perspective (Katz, 1993) that might converse with the qualitative data gleaned from children's lived experiences. However, my attempts to apply the most comprehensive physical environment rating scale available (Moore, O'Donnell, & Sugiyama, 2009) to an ECE centre where I had previously worked highlighted the way assumptions about children's use of space and contested notions of quality were embedded in the scales[4]. I also questioned whether such approaches may underplay children's contribution to the production and transformation of space. This is discussed further in Chapter 2.

Although this research is not seeking to assess the quality of ECE per se, my recognition of the relative nature of 'quality' contributed to my decision to research lived experiences which are, by nature, subjective and also to my desire to seek theoretical

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4 For example, subscale 7.3 of the Children's Physical Environments Rating Scale (Moore et al., 2009), applied a higher rating to space in which "Children in one activity area can see other activities within the same module (e.g., low or no walls/partitions, low windows or other openings if there are walls, low furnishings, etc)". This reflects the view that children should be visible, both to adults and to each other, at all times.

approaches that recognise space as a dynamic social-material interplay between material space (including size and configuration) and social relations. These ideas are discussed later in this chapter and elaborated in Chapter 3.

The significance of NZ's ECE policy context for lived experiences

Finally, ECE centres in NZ operate on the principle that care and education are inseparable and that learning results from all experiences, including ones that may be seen as primarily related to children's physical care and well-being (Dalli, 1990; Ministry of Education, 2017d; Podmore & Meade, 2002). This integration of care and education creates a context in which all of the children's experiences in ECE centres are recognised and valued. At the time that I was gathering my data, NZ's ECE curriculum framework, *Te Whāriki*, defined curriculum as "the sum total of the experiences, activities, and events, whether direct or indirect, which occur within an environment designed to foster children's learning and development" (New Zealand Ministry of Education, 1996, p. 10). This definition clearly encompassed the lived experiences described earlier in this chapter and suggested that my research approaches place a spatial lens on children's *holistic experiences* as they occur in ECE centres. Further, both NZ's original curriculum framework, *Te Whāriki* (New Zealand Ministry of Education, 1996) and its recently updated version (Ministry of Education, 2017d) positioned children as social actors, or "active learners who choose, plan, and challenge" (Smith, 2007, p. 155) – an approach that reflects current sociological understandings of children and childhood as I have discussed earlier in this chapter.

Outline of the thesis

This thesis investigates:

What is the relationship between the size and spatial configuration of ECE centre 'indoor activity space'[5] and young children's lived experiences?

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[5] As defined by New Zealand's Education (Early Childhood Services) Regulations 2008. My focus is on indoor, not outdoor space, as it is under-researched. Although other researchers have focused exclusively on either outdoor or indoor environment (Änggård, 2013, 2015; Greenfield, 2007; Melhuus, 2012; Rutanen, 2012), I have also tried to maintain a holistic approach by capturing children experiences as they move between the indoors and outdoors. This approach is elaborated in Chapter 4.

I used two further sub-questions to guide my research:

a. How do children occupy indoor activity space, transform it, and engage socially in spatially diverse ECE centres?

b. How do teachers' conceptions of indoor space and their conceptualisations of children shape children's lived experiences in all-day centres?

This thesis is divided into eight chapters. In Chapter 2, I review literature that helps to illuminate how built environments contribute to the production of social space and interact with children's lived experiences. I draw on literature from diverse theoretical and methodological perspectives and attempt to bring ideas into conversation with each other wherever possible. The notion of children's *lived experiences* is broad and consequently, this chapter includes literature on children's social interactions, play, movement patterns, and experiences of crowding, noise, and daily rhythms, among others. Concepts of child-friendly environments create links between the literature and child-friendly aspects of children's lived experiences.

The conceptual and theoretical framework that I use throughout the thesis is developed in Chapter 3. This framework is informed by Lefebvre's (1991) spatial triad and the notion of rhythmanalysis (2004). James Gibson's (1979) theory of affordances is also used to provide an additional lens for understanding the agency of children and teachers in the interplay of Lefebvre's three dimensions of space. Additionally, I outline some key challenges currently facing the fields of children's geography and childhood sociology, including critiques of the 'socially constructed child', the role of materiality, and a tendency towards theoretical dualisms. Chapter 4 provides an overview of the methodology of my study. I describe my use of a mosaic approach that included participatory and observational strategies to generate visual, verbal, and auditory qualitative data for this project. In this chapter, I also outline my approach to data analysis and describe measures I have taken to ensure the ethical care of participants and their data.

In Chapters 5, 6, and 7, I report on and discuss the findings from my research and identify emerging patterns about children's lived experiences in ECE built environments. Chapter 5 is focused on how group and individual rhythms arose in each

built environment, and how these influenced children's everyday lives. The focus of Chapter 6 is on children' social interactions; it presents an analysis of children's mobility patterns in relation to how they occupy and transform indoor spaces. Chapter 7 describes how teachers navigated tensions between the ways physical space transformed visibility, noise, and density in each centre, and images of children as competent social actors who are both 'being and becoming', and how this influenced children's experiences, particularly their opportunities to exercise agency in their everyday lives. Chapter 8 draws together threads from the three empirical chapters (Chapters 5-7) to address what children's lived experiences looked like in the centres, and how the physical size and configuration of the 'activity space' influenced those experiences. Chapter 8 also explains the contributions this thesis makes to wider research in the areas of childhood studies and children's geographies, and ends with suggested avenues for further research.

Chapter 2

LITERATURE REVIEW

In Chapter 1, I explained that space is continually reconstructed from the interplay of both its social and material dimensions (Massey, 1992; Soja, 2009). Understanding that space arises from a social-material interplay reveals the contributions people make to its construction. This understanding also helps us to recognise that space is produced in contexts that enable and constrain particular practices (Gallacher, 2016). In this chapter, I review literature that illuminates how the *size and configuration* of physical space contributes to the construction of space and how its contributions impacts on young children's lived experiences in ECE centres through a social-material interplay. Although the quality of children's lived experiences cannot be universally defined (see Chapter 1), I have drawn on the concept of 'child-friendliness' (Chatterjee, 2005; Kenny, 1981) to help identify characteristics of child-friendly places.

Child-friendliness as an organising framework

Sudeshna Chatterjee (2005) and David Kennedy (1991) have both conceptualised 'child-friendly' environments as places where children's relationships with place emerge from an interplay of the material and social dimensions of space. Further, they both describe characteristics of child-friendly environments within children's lived experience. Chatterjee (2005) positions children as active agents who selectively engage with their surroundings by recognising and actualising affordances – equally privileging the child and the environment (see also Broberg, Kyttä, & Fagerholm, 2013; Heft, 2001). According to James Gibson, affordances are *opportunities* offered by the physical or material environment to an organism and can shape children's practices by enabling particular actions (Gibson, 1979). Affordances provide a way to examine how both children and adults 'make the most of' space and I explain how I use this concept in greater depth in Chapter 3. Chatterjee's (2005) definition of a child-friendly environment is based on six key aspects of human friendship that she has interpreted to apply to the environment "using a vocabulary borrowed from environment behaviour,

geography and environmental psychology literature" which she outlines as follows (p. 16):

> A child-friendly place is an environment that promotes exploration and actualization of its many affordances for different activities and social interactions; offers opportunities for environmental learning and competence by shaping physical characteristics of the place through repeated use and promoting children's participation in care and maintenance of the place; allows children to express themselves freely in creation and control of territories and special places; and protects the secrets and activities of children in these childhood places from harm. (Chatterjee, 2005, p. 17)

One further useful contribution to this discussion is proposed by Kennedy (1991). Although Chatterjee's definition applies to a variety of environments, Kennedy 's (1991) 'practical meditation' on space and architecture focuses on children's lived experiences in ECE centres. It draws on a range of literature (e.g., Greenman, 1988; Kritchevsky & Prescott, 1969; Moore, 1986; Wolfe & Rivlin, 1987), including Roger Hart's (1979) work on children's experiences of place. Kennedy (1991) describes ECE centres as institutions that have traditionally been places of external control, organisation and routinisation where children can lack privacy, intimacy, and personal choice. Kennedy recognises the need to balance home and institution – viewing this as analogous to balancing "the personal and the collective" (p. 44). Similarly to Chatterjee (2005), Kennedy (1991) assigns human characteristics to the environment, referring to the best 'personality' of ECE centre spaces being ones where "strong individualism is tempered by strong care for others… [because] the individual who takes responsibility for the other will emerge from a collective that takes responsibility for – i.e., allows – the individual" (p. 44).

Kennedy's "characteristics of the optimal collective environment for children" (p. 44) thus overlap closely with and encompass Chatterjee's definition (see also Broberg et al., 2013) and are summarised as follows[6]:

(i)   *habitable* - offering emotional shelter, privacy, intimacy, freedom of movement, territoriality, empowerment, and places for personal wellbeing, such as eating and sleeping;

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6 Kennedy also includes characteristics related to the outdoors. These are not include because they are beyond the scope of this thesis' focus on indoor activity space.

(ii) *unfinished character* - offering accessibility, choice, autonomy, and opportunities for negotiation that enable children to engage and interact with space and to 'leave their mark on the world' by transforming their environment through personal initiative; and

(iii) *varied* – offering balance among the places of attachment, seclusion, quiet and engagement (Kennedy, 1991, p. 46).

Figure 2.1 Intersection of child-friendly characteristics

Environmental concepts that provide a framework for a definition of child-friendly place (Chatterjee, 2005)

Environmental care
Children participate in caring for and maintaining places that are safe, and provide different opportunities for favorite activities, play and interests.

Place-based exchange
A place that affords the favorite activities of the child will be sharing them with the child.

Learning and Competence
Through continuous, reciprocal interaction with the everyday environment children create new affordances by discovering and manipulating nested and sequential affordance of features and settings. The direct and indirect experience of place leads to environmental learning and competence (Matthews 1992)

Control
Place allows creation of identifiable territories over time that can be defended.

Feelings and emotions
Place allows child to create secret places by manipulating its affordances and features and protects those places. This process supports sense of self by regulating feelings and emotions in and about place.

Freedom of expression
Place exists in a field where children do not feel inhibited in exploring and actualiizing all the perceived affordances of the place at will.

Characteristics of the optimal collective environment for children (Kennedy, 1991)

Habitable
Offering emotional shelter, privacy, intimacy, freedom of movement, territoriality, empowerment, and places for personal wellbeing, such as eating and sleeping.

Unfinished character
Offering accessibility, choice, autonomy, and opportunities for negotiation that enable children to engage with space and to transform the environment through personal initiative.

Varied
Offering balance among the spaces of attachment, seclusion, quiet, engagement and so on.

Source: Author

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In identifying these characteristics, Kennedy aimed to 'ground' the work of others "…in the phenomenology of the child's lived experience" (p. 43). A key feature of this 'optimal space' is its unfinished nature (transformable) and the ability this offers children to 'act on space' since, as Kennedy has claimed, "environments that coerce us, that "do it all for" us, deny the … child – in all of us" (p. 45).

Figure 2.1 presents how the characteristics of child-friendliness discussed by Chatterjee (2005) and Kennedy (1991) intersect, and how Kennedy's broader characteristics can be seen as encompassing Chatterjee's. Where relevant, I have made links between child-friendly characteristics and the literature in this review and have also referred back to these characteristics when discussing children's lived experiences in my findings and conclusion chapters.

The literature selected for this review reflects diverse theoretical and methodological perspectives and only includes texts available in the English language. It includes quantitative research that has contributed to our understandings of the way physical space can constrain and enable particular practices. Much of this research underpins measures of quality such as rating scales (Harms, Clifford, & Cryer, 1998a, 1998b; Moore, 1996; Moore et al., 2009), and has influenced ECE centre design (e.g., Dudek, 2000, 2007; Greenman, 2007; Olds, 2000). Although viewing space somewhat as a 'container', most quantitative research cited in this review recognises the interplay of social and material space (e.g., Campos-de-Carvalho & Rossetti-Ferreira, 1993; Legendre & Fontaine, 1991; Moore, 1986). This review also includes qualitative research that provides insights into children's experiences and has contributed to our understandings of the social aspects of space, for example by illuminating the meanings that children and adults have assigned to space (e.g., Gallacher, 2005; Rutanen, 2012; Skånfors, Löfdahl, & Hägglund, 2009). I recognise that the notion of children's *lived experiences* is broad and, in response, this chapter includes literature on children's social interactions, play, movement patterns, daily rhythms, and their experiences of crowding, noise, and the negotiation of space and time. I begin by exploring how physical space can interact with and influence children's social relational interactions, friendships and play as a key attribute of their lived experiences.

Space and social interaction, friendships, and play

A sizeable body of research attests to the importance of positive social interaction and friendships in children's everyday lives (e.g., Corsaro, 2009; Dunn, 2004; C. Howes, 1983; Kernan & Singer, 2010; Manning-Morton, 2014), and that children themselves place a high value on friendships (Carr, 2001; Ceglowski & Bacigalupa, 2007; Corsaro, 1997; Einarsdottir, 2005b; Kragh-Müller & Isbell, 2011; Niklasson & Sandberg, 2010; Stephen & Brown, 2004; Stephenson, 2009b). Play is also fundamental to the quality of children's lives (Alcock, 2007; Einarsdottir, 2005b; Harker, 2005; Singer, 2013; Te One, 2010). In the following sections, I examine what is known about how *physical space* can impact on children's social interactions, friendships, and play. I pay particular attention to how different physical spaces enable or constrain child-friendly experiences, for example by affording children opportunities to protect activities, move freely, create and control territories, or to find seclusion (Chatterjee, 2005; Hart, 1979; Kennedy, 1991).

Defining space in open-plan settings

The design of ECE centres is often underpinned by a view of children as 'learners' for whom desirable learning environments are comprised of 'discrete learning areas'. This is evident in ECE centre design books which advocate open-plan physical spaces, with well-defined[7] functional (or 'learning') areas such as art, book, or block areas that enable adult supervision; it is also assumed that these areas enhance children's social lives (e.g., Greenman, 2007; Olds, 2000). Such design is supported by a body of quasi-experimental research that has demonstrated associations between increased spatial definition of these areas and more positive social experiences among children (Moore, 1986; Prescott, 1987; Prescott, Jones, & Kritchevsky, 1974).

In a study which involved systematic naturalistic observation of children of 2 ½ to 6 years of age across 14 ECE centres in the USA, Gary Moore (1986) found that, in contexts where teachers engaged with individuals, fostered independence, and were not restrictive, well-defined functional areas correlated with more exploratory behaviour, positive social interactions, and cooperation among children (see also Campos-de-

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7 By which I mean areas that are clearly organised and somewhat separated from each other through the arrangement of furniture or other materials.

Carvalho & Rossetti-Ferreira, 1993). In Moore's (1986) study, ECE centres were matched according to how well-defined the functional areas were within open-plan rooms. Well-defined areas were characterised by partial acoustic and visual separation. These were usually created through the arrangement of furniture, which has only a limited impact on noise transfer, or the transmission of sound through air, a point I discuss further later in this chapter. In Moore's study, characteristics of well-defined areas also included the legible display of materials, the availability of surface areas to work on which could accommodate up to five children (5-10 m² each), and clear boundaries with circulation space that did not cross through, or interfere with, children's activities (Moore, 1986). Circulation space includes "...main traffic routes ... among the activity spaces used by children" (p. 208). Recent research in schools confirms Moore's idea that circulation space plays an important role in influencing "privacy, group identity and the acoustic environment" (Dovey & Fisher, 2014, p. 49).

Well-defined functional areas have also been positively correlated with children's immersion in activities (Moore, 1986), higher frequency of use (Campos-de-Carvalho & Rossetti-Ferreira, 1993), and increased independence and social competency among three-year-olds (Maxwell, 2007). From an environmental perspective, social competency refers to children's ability to interact effectively with their surroundings (Maxwell, 2007) and to actualise environmental affordances appropriate to their development (Heft, 1988) – an aspect of child-friendliness identified by Chatterjee (2005). Maxwell has found that clear circulation paths and recognisable boundaries around functional areas can help children learn "how to use the space" (p. 232) because these features contribute to the ease with which children can predict and navigate space. Maxwell (2007) has described well-defined environments as being 'legible', or easily read, by children and it is this spatial legibility that contributes to children's environmental competency.

The notion that children learn 'how to use space' in particular ways reveals how, by structuring space to create well-defined areas, adults can also control children's choices. Alison Stephenson (2010) has argued that this practice is 'concealed' within the teacher's role (p. 27), and it is clear that research about well-defined functional areas is underpinned by an assumption that particular 'discrete learning areas' are desirable for

children's play. However, well-defined spaces have also been shown to restrict the opportunities children have to 'act on' or transform these functional areas, for example, by moving equipment between spaces (Nichols-Whitehead & Plumert, 2001). This lack of flexibility can constrain children's opportunities to participate in the more meaningful play that results when children can somewhat determine the use of space (Maretnsson, 2004 as cited in Melhuus, 2012) or 'leave their mark on the world' by transforming space – a characteristic of child-friendliness (Kennedy, 1991, p. 44). I will return to this idea later in this chapter when I discuss literature that illustrates how teachers' structuring of space and time regulates children's behaviour and fosters social order.

In summary, the literature on the creation of well-defined areas within open-plan spaces suggests that these areas play a role positive role in children's play experiences by supporting competence (through legibility), and social interactions (by protecting children's play), although they can also constrain children's opportunities to transform space. However, a notable absence in this literature is how the size or configuration of activity space (the built environment) influences the way well-defined space is structured. In addition, because much of this research is based on an adult-centric conception of play in which adults largely define the use of space, it does not reveal how children attempt to transform such space by changing its mood, character, or purpose.

Transforming space

The idea that children should be able to 'act on' or transform space (Chatterjee, 2005; Kennedy, 1991) suggests that ECE built environments need to accommodate a shifting balance between stability and fluidity. Spaces that allow some fluidity, or 'unfinished spaces' enable children to create and control territories (a characteristic of child-friendliness) because their use remains undetermined. Helen Woolley's (2015) research about people's use of cities has drawn distinctions between 'planned or constructed' and 'found' spaces. Woolley (2015) has described 'planned spaces' as being under the control of, or designed by, someone else (for example, modern skateboard parks), whereas 'found spaces' are described as being unassigned and able to be appropriated by people (for example, roads, car parks, wild areas, public grass). Woolley's (2015) research revealed that because planned spaces and the rules imbued in them, did not

always meet young people's "real needs", found spaces were often appropriated for play, "eschewing the constructed spaces and the power they represent" (p. 175). These distinctions provide a useful frame for thinking about stable and fluid spaces and suggest that, in balancing stability and fluidity, ECE environments should also include some unassigned space that children can appropriate for new purposes.

Several decades ago, in their book *Planning environments for young children: Physical space*, Kritchevsky and Prescott (1969) identified 'potential space' as being important in ECE centres because (similarly to unassigned space) it permitted children to appropriate space for their own purposes while also maintaining well-defined functional areas. They suggested that at least one-third of the floor area in ECE centres remain clear for this purpose (Kritchevsky & Prescott, 1969). Geographer Owain Jones (2000) has provided a more nuanced description of 'potential' space by distinguishing *monomorphic* space, as that which is "dominated by a single use that excludes the possibility of other uses", from *polymorphic* space which "can sustain alternative uses by the children even in the presence of the dominant use" (p. 37). Both 'unassigned' and polymorphic spaces may be important in enabling children to 'act on' or transform space (Kennedy, 1991).

The outdoors has traditionally been a space in ECE centres with greater potential space and more opportunities for transformation. Alison Stephenson's (2002) research into the differences between indoor and outdoor spaces in ECE centres built on, and supported, previous research that had suggested that children playing outdoors in ECE centres had more room to move, more personal space, and fewer strains on their developing social skills (see also Frost & Dempsey, 1990). Stephenson (2002) found that the outdoors were less controlled by teachers and were an environment of change – compared to the more stable indoor space – and therefore preferred by children. Teachers perceived indoor space as being harder to alter, possibly because routines such as lunch and nappy changes occurred indoors, whereas in the outdoors teachers allowed children to, for example, transport equipment more often.

However, while research endorses the importance of potential space in outdoor areas, (with the exception of Kritchevsky and Prescott (1969)), I have been unable to find such

research relating to indoor space. Further, I have not found research about how potential space may be influenced by size or configuration of the indoor environment, or the extent to which it is accounted for in existing recommendations for size (e.g., Greenman, 2007; Moore, 1996; Moore & Sugiyama, 2007; Olds, 2000). The only rating scale dedicated to ECE physical environments (Moore et al., 2009) recommends overall activity space[8] of more than 4m^2 per child indoors. It is not clear if this recommendation is based on the inclusion of unassigned potential space in addition to 'functional areas' The few researchers and designers in this area suggest that between 3.25m^2 and 5m^2 is needed to support acceptable outcomes for children but, again, it is unclear how this overall amount has been arrived at (Moore, 1996; Olds, 2000; White & Stoecklin, 2003). Taken together, this research relating to stability and fluidity points towards child-friendly environments being ones in which unassigned 'potential' space and polymorphic space may play a role in enabling children to create and transform space. However, it reveals little about: *how* children use potential or polymorphic space in ECE centres; *how* teachers conceptualise this type of space; or *how* the size or configuration of activity space influences its availability.

While research suggests that stability in the physical environment is supportive of very young children's competence because it is legible and predictable, research also suggests that younger children's own mobility and their spatial connections to other people may play an important role in how they use space.

Toddlers making visual and spatial connections

A small body of research about toddlers' use of space draws attention to: (i) the role of visual connections between adults and toddlers and how physical space influences this, and (ii) the role of movement as a form of communication among toddlers. Research in these two areas speaks to divergences between younger and older children's spatial practices that became relevant during my study. This research is elaborated in Chapter 6.

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8 The closest equivalent to 'activity space' (as defined in this thesis) that is described in this rating scale is the 'home base' activity space that is freely accessible to a particular group of children.

Musatti and Mayer (2011) have explored how the spatial organization of the environment influenced newly mobile toddlers' (6 – 28 months of age) interactions with the physical and social world. Their study drew on observational (video) data and found that, in a context where children were highly mobile, "the permanent location of the educator … represented a reference for children's clustering and reciprocal attention" (p. 218). The educator's location near activities brought children's attention to the meaning of the activities and supported children to remain engaged together and re-join activities after watching from a distance.

Musatti and Mayer's (2011) findings are consistent with Legendre and Munchenbach's (2011) quasi-experimental research which also found that adult proximity played a role in influencing interactions among toddlers and their focus of attention (Campos-de-Carvalho & Rossetti-Ferreira, 1993; Legendre, 1999; Legendre & Fontaine, 1991). This 2011 study included 175 children (18 to 40 months) in 12 ECE centre groups and found that when children were close to adults they were more "socially oriented towards the attractive adult partners rather than towards peers" (Legendre & Munchenbach, 2011, p. 111). This research built on an earlier study by Legendre (1999) that found toddlers used spaces that were visually obscured from adults less often for interacting with peers when their friendships were still emerging, but more often if they already had a "tight relationship" (Legendre, 1999, p. 463). Legendre concluded that, while two-year-olds with strong friendships interacted more frequently with each other in areas visually obscured from adults (compared to when they were near adults), those with weak or emerging friendships tended to avoid areas that were visually obscured. Legendre explained this difference in terms of attachment theory and theorised that children experienced a less secure emotional base when adults were out of sight, suggesting that toddlers needed the safety of adults until they felt secure with peers. While Legendre's research tells us that visual and spatial connections play a role in the quality of very young children's social interactions, his research focused on the visual and spatial connections *between adults and children*, rather than *among children*. This raises questions about how children use visual and spatial connections to support their own play and friendships in diverse physical spaces.

Toddlers, for example, have been found to actively contribute to spatial experiences through their actions. Abigail Hackett's (2012) ethnographic study of toddlers during repeated visits to museums with their families, illuminated some ways that very young children used visual and spatial connections as communicative tools. Hackett (2012) described children as "moving through the space, with speed and independence, in groups and alone, leading, following, dragging parents or other children with them along the path, running, stopping and retracing steps" (p. 2). She interpreted these spatial practices as "key elements of [children's] multimodal communicative processes" (Hackett, 2012, p. 3) that contribute to their place-making activity. In contrast to research that draws on attachment theory or focuses on the role of the adults in supporting young children's social lives, Hackett's (2012) findings position children as social actors and foreground their own approaches to communication through spatial practices.

Hackett's (2012) research about toddlers' mobility patterns has implications, not only for understanding children's use of space but for the role visual connections may play in their social interactions. It raises questions about how very young children might use physical space to support their friendships and form and maintain groups in the context of spatially diverse, mixed-age and all-day ECE centres. The final section of my exploration of how physical space interacts with children's social interaction, friendships, and play focuses on group size. This section begins by briefly returning to Gary Moore's (1986) study of the impact of well-defined functional areas on group size because functional areas interact with the size and configuration of physical space.

Group size and space

Group size is an important contributor to the quality of children's experiences because small groups are supportive of focused and intimate relationships and positively impact children's cognitive, linguistic and social-emotional behaviour (Dalli & Pairman, 2013). Gary Moore (1986) has theorised that well-defined functional spaces reduce interruptions to children's social play by affording protective spaces for *small groups.* His research was premised on the idea that, because children naturally form groups of less than five (Aiello et al., 1974 cited in Moore, 1986), each functional area should be designed to support this group size. Corsaro (2003) also points out that older children

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can be protective of their shared play (and interactive space) in small groups because the rules and negotiations involved in children's social play make establishing and maintaining social interactions with peers challenging. He argues that the social ecology of many ECE centres "increases the fragility of peer interaction" (Corsaro, 2003, p. 40) because people interact in a collective context. Opportunities to protect interactive space among friends can also enable children to spend time in small groups "of their own choosing" (Stephen & Brown, 2004, p. 333), and this is important in allowing peer culture to flourish.

Moore's (1986; 2003) view that group sizes of up to five (within the context of a larger group) are beneficial to relationships is shared by other theorists and researchers (e.g., Gandini, 1993b; Prescott, 1987) and is evident in ECE centre design in the influential Reggio Emilia ECE centres in Northern Italy. As I explained in Chapter 1, these centres are based on relational pedagogy (Gandini, 1993b) and include physical spaces that are supportive of groups of *between two and four children* because this group size facilitates "...fruitful conflicts, investigations, and activities connected to what each child has previously said and self-regulatory accommodations..." (Gandini, 1993b, p. 69).

In Reggio Emilia, the planned use of space in the centres crystallised for teachers after a study in 1976 when teachers analysed the times and ways that space was used in six municipal centres. During their research teachers became "convinced that smaller spaces can offer opportunities for children to work well in small groups, to listen and be listened to, and therefore to communicate" (Gandini, 1998a, p. 171). This led to a decision to create cluster of rooms for each age-group, rather than a single 'classroom'. Around the same time, teachers decided that, in larger rooms, an 'L-shaped' configuration minimised visual interference and provided "greater tranquillity for work in groups" while enabling supervision, compared to classrooms with an open configuration (Vecchi, 2010, p. 86). So, group size matters and research suggests that physical space can influence the ease with which small groups form and are maintained among children.

David Kennedy's (1991) view that there is an inherent tension between individual and collective interests in ECE centres, highlights the importance of children having

opportunities to choose whether or not to engage socially in the ECE spaces that they live in. Skånfors et al.'s (2009) study supports this position. Their ethnographic observations of two to five-year-old children's interactions during free play in an all-day centre in Sweden where children were able to move freely between a lounge and five small rooms, revealed that when children closed the room doors they were often left undisturbed by others. The researchers found that some children 'planned ahead' to get a room of their own and moved to a different room if disturbed by others (Skånfors et al., 2009). By contrast, when children occupied open-plan spaces within the centre, other children joined and left the interactive group play more frequently. Children's desire to create and protect hidden spaces with friends was also evident in Einarsdottir's (2005b) finding that five and six-year-old Icelandic children identified the 'best places' in ECE centres as the huts they had built, or rooms where they could "close the door and play without adult interference" (p. 470).

Together these three studies by Einarsdottir (2005b), Skånfors et al (2009), and reported by Gandini (1998b) provide the few examples of research that has directly explored how the configuration of the built aspects of children's activity space interacts with children's use of space. They all suggest that ECE centre indoor activity spaces which include architecturally separated rooms (complex space) can provide opportunities for older children to participate in small groups and to protect these groups' interactive space. However, less is known about what else these rooms afford in terms of children's everyday experiences (for example, opportunities to be noisy or boisterous); how younger children protect their interactive space in environments with multiple rooms; or how teachers' organisation of space and time influences the use of these rooms.

The following section explores how feelings of crowding are influenced by the interplay of physical space and crowding in ECE centres. Although research about crowding inevitably also deals with children's social interactions, I have chosen to group research on crowding and noise under the broad heading of 'wellbeing' to help provide structure to this chapter.

Wellbeing

Crowding and space

As I noted at the start of this chapter, child-friendly environments support children's personal wellbeing, offer places of seclusion and quiet, and allow children to create special places (Chatterjee, 2005; Kennedy, 1991). These characteristics are in stark contrast to the experience of crowding. The theoretical literature on crowding among adults links two concepts to the feeling of 'being crowded': an excess of stimulation, and lack of privacy (Gove, Hughes, & Galle, 1979). Altman's (1975) privacy regulation theory positions privacy as 'boundary regulation', a process whereby individuals or groups control others' access to them.

Crowding is related to group size and physical space and there have been some indications that when the amount of space in ECE settings is decreased, children exhibit more aggressive and less social play behaviour (see Trawick-Smith, 1992). However, Driscoll and Carter's (2004) review of 12 experimental studies that examined the effect of spatial density (the amount of space per child) on children's social interaction in ECE centres found no consistent evidence to support the often-cited concern that aggression between children increases in high-density conditions. Driscoll and Carter (2004) concluded that "despite considerable recent interest and research on setting events, the body of research on spatial density is dated and methodologically problematic" (p. 7). However, Bedford and Sutherland (2008), while working as NZ government-appointed health advisors, have pointed out that NZ's minimum standard for space in ECE centres (2.5m^2) "roughly equates to 30 children and 3-7 adults in a three bedroom house..." and have argued that "...whether you call the building a house or an Early Childhood Education Service, overcrowding is likely to have the same consequences for health" (p. 41).

Broader literature focused on crowding among adults does suggest that the configuration of physical space plays a significant role in reducing feelings of crowding by influencing patterns of space use. Built environments that have a number of architecturally separate spaces (e.g., enclosed rooms) create auditory and visual barriers that help moderate the effects of crowding (Evans, Lepore, & Schroeder, 1996).

As discussed in the previous section, architectural complexity can create and protect small group interaction within a larger group (Einarsdottir, 2005b; Gandini, 1998b; Skånfors et al., 2009). It can also influence patterns of space use throughout the day and this can impact people's feelings of crowding by influencing the frequency of interactions and informal groupings (Baum & Davis, 1980).

Children in ECE centres have been shown to use space as one of several strategies to influence the frequency of their interactions. Skånfors, Löfdahl, and Hägglund's (2009) examination of the strategies children used when withdrawing from social contact showed that children made themselves 'inaccessible' to others by "acting distant, reading books and hiding" (p. 100) and suggested that children's strategies were connected to the centre's daily rhythms – children withdrew at busier times, possibly to avoid feeling crowded. Children also withdrew to be alone early in the mornings more often than later in the day, possibly because there were "fewer children and a calmer atmosphere" in the morning and they were seldom disturbed (Skånfors et al., 2009, p. 106) whereas, when more children arrived "interactions became more intense, including conflicts, exclusion activities and more running around" (p. 106). Children's and teachers' negotiation of space and time is discussed later in this chapter where I explore literature about relationships between ECE centre rhythms and the use of space. In Skånfors et al.'s study (2009), children's responses suggested that crowding mattered to children and influenced the complex interplay of activity and rhythms. However, Skånfors et al. (2009) do not provide the size of the centre, or how the space per child ratio changed throughout the day and this raises questions about how the *size* or *configuration* of these physical aspects may have interacted with children's everyday lives, for example by contributing to crowding, and the strategies available to children for responding to feelings of crowding.

Altman's (1975) privacy regulation theory, described earlier in this section, also suggests that there is a cultural dimension to crowding that influences what are appropriate demands and responses. Several decades ago, Americans Sybil Kritchevsky and Elizabeth Prescott (1969) found that children in some ethnic groups functioned well in relatively crowded and congested spaces and suggested that these may resemble familiar home settings. Conversely, Maxwell's (1996) later study suggested that children

who live in both high-density homes and attend high-density ECE centres were more susceptible to behavioural difficulties. Earlier research suggests that some, but not other, individuals may be better able to regulate their environment to avoid crowding (Baldassare, 1978 as cited in Gove et al., 1979) suggesting that power relations may play a role in children's experience of crowding. Siraj-Blatchford and Clarke (2000) have discussed gender and age differentiation associated with children's territorialisation of spaces in ECE centres whereby children distanced themselves from those whom they did not know, nor want to identify with, thus highlighting the significance of relationships to children's experiences of crowding. Taken together, this literature presents an unclear picture of children's experiences of crowding in ECE centres and raises questions about how diverse physical space may interact with power relations among children, and between children and adults.

I end this section on crowding by considering literature on 'retreat spaces'. Retreat spaces are comprised of lofts or small enclosures within open-plan space. They are widely recommended for ECE centres (e.g., Gonzalez-Mena, 2013; Greenman, 2007; Olds, 2000) to make centres more home-like by offering children access to their own "territories" where the demands to share their "feelings and materials" can be temporarily lifted (Olds, 2000, p. 20). Although retreat spaces are associated with 'quiet' and individual use (Willis, 2016), and are often assumed to provide effective "temporary buffers from noise and activity" (Weinberger, 2000, p. 78), Torrens and Griffin's (2012) three-year study in an American ECE centre found that retreat spaces acted as 'hotspots' for both social *and* solitary play.

Torrens and Griffin's (2012) study used space-time data collection techniques to track the movement and location of children and activities and their findings support the idea that children's desire for privacy operates at both peer and individual levels. Torrens and Griffin's (2012) findings are consistent with those of an experimental study of 32 three to five-year-old children in both a high density (4.6m^2 per child) and 'low' density (9.9 –20.2 m^2 per child) centres in the USA. This study (Lowry, 1993) suggested that density influenced children's desire for solitary play. Children in the high-density centre used enclosed structures more for solitary play, while those in the lower density centre used the enclosed structures for interactive play. While this research about 'retreat

spaces' supports the idea that children experience feelings of crowding in ECE centres, Lowry's (1993) study does not tell us about *very* high-density contexts – all the centres in Lowry's study had more m^2 per child than NZ's ECE centres that operate on the minimum allowable standard (2.5m^2 per child). Finally, as I noted earlier in this chapter in relation to well-defined functional areas in open-plan space, it is unclear from these studies how lofts affect noise levels.

Together, the literature on crowding in ECE centres does not provide a clear picture about how the amount of physical space influences children's behaviour or experiences, although it does suggest that children's desire for privacy operates at both peer and individual levels. This raises questions about how the size or configuration of physical space may contribute to feelings of crowding in ECE centres. In relation to adults, it is known that enclosed rooms can create auditory and visual barriers that help moderate the effects of crowding, but there is little evidence about how such barriers influence feelings of crowding among children. The exception to this is Skånfors et al. (2009) research suggesting that children actively seek out enclosed spaces to avoid crowding. The literature on crowding in ECE centres also raises questions about how diverse physical space may interact with power relations among children, and between children and adults. Finally, it is unclear from these studies how lofts, or separate rooms impacted differently on noise levels, an area I discuss next.

Children's experiences of noise in ECE centres

Acoustics is an important aspect of the interplay of physical space and people; acoustics influence both teachers' and children's experiences, particularly during social interactions (Maxwell & Evans, 2000; McLaren & Dickinson, 2005; J. Valentine et al., 2002). The World Health Organization (Berglund, Lindvall, & Schwela, 1999) recommends that decibel (dB) levels don't exceed 45 dB during sleep, or 65 dB over one hour. The latter recommendation is premised on the view that noise levels should not interfere with normal speech. Recommendations for contexts such as school classrooms are between 35 – 40 dB (McLaren & Dickinson, 2003, p. 19).

McLaren and Dickinson's (2003) research on noise levels in NZ ECE centres found that children experienced time average decibel levels (L_{Aeq}) of between 74 – 79 dB. The

average levels at the quietest *times* (during quiet activities such as sleep and mat-time) dropped to between 63 – 69 dB, a level still significantly higher than the WHO's recommended maximums. In NZ all-day centres, 43% of children in McLaren and Dickinson's (2003) study experienced sound exposure levels in excess of those permitted in adult workplaces, compared to 18% of children in sessional centres. McLaren (2008) has also reported that children lacked quiet spaces to retreat to in NZ ECE centres, even though this is required by NZ regulation (Ministry of Education, 2017b, Criteria PF1).

Because McLaren and Dickinson's (2003) study aimed to measure fluctuations in dB over the course of a day rather than in specific physical spaces, sound meters were attached to people. This means that although the rhythms of the day (such as quiet and noisy times) were measured. The study did not reveal how the size or configuration of activity space, and people's movement patterns and use of particular spaces impacted on noise levels. It is known that distance reduces noise transfer because walls disrupt the phenomenon of 'shared air' (whereby noise travels in open physical spaces), and that acoustic tiles can reduce noise levels by absorbing sound (McLaren, 2008). However, less is known about how children's use of open-plan and complex spaces influences their opportunities to choose when to be noisy or quiet, or children's other everyday experiences in relation to their wellbeing, social interactions, and play interests.

Negotiating space and time in ECE settings

As noted in Chapter 1, space is dynamic rather than static because spatial connections are constantly shifting, and space and time are therefore considered to be inseparable (Massey, 1992, 2005). Because the structuring of space and time (spatio-temporal structuring) regulates children's behaviour and fosters social order in ECE centres (Emilson & Johansson, 2009; Gallacher, 2005, 2016; James & James, 2008; Markström & Halldén, 2009; Rutanen, 2012, 2014; Pacini-Ketchabaw & Kummen, 2016) it is also imbued with tensions between individual and collective interests (Kennedy, 1991). On one hand, children in ECE centres are recognised by adults as being autonomous, able to exercise agency, and encouraged to develop individual interests. On the other hand, ECE centres are constructed as social places for children to be together and this influences

the way space and time are structured (James, Jenks, & Prout, 1998; Lofdahl & Hagglund, 2007; Markström & Halldén, 2009). Lofdahl and Hagglund (2007) have argued that because Swedish centres have a tradition of "engaging children in common activities in order to develop knowledge in co-operation with other children ...physical spaces are designed to promote common activities rather than solitary ones" (p. 330).

The idea that the structuring of space and time regulates children's lives adds a spatial dimension to our understanding of the processes through which a "collective discourse" can come to dominate ECE centre life. Examining spatial and temporal structuring may also illuminate conditions that open the way for "exceptions and possibilities to question or oppose the social order" (Markström & Halldén, 2009, p. 115). In the final section of this chapter, I explore the literature that illuminates how physical space may contribute to the way space and time are negotiated in ECE centres, and how these negotiations influence children's everyday experiences. Some of this literature overlaps with, and builds upon, previously discussed literature about well-defined functional spaces, group size, and transformability, and crowding in particular.

A handful of studies have made significant contributions to our understandings of the socio-spatial practices of very young children in ECE centres. For example, Niina Rutanen's (2012) observational study of a group of 1 to 3 year-olds in a Finnish ECE centre demonstrated how daily timetables were frequently used to assign activities to "particular spatial locations at specific times of the day" (p. 204). She found that teachers used the children's age-related skills to justify the establishment of some of these spatial constraints. In particular, pre-planned activities such as lunch and sleep were restricted to particular locations and younger and older children were assigned different tables and bunks (low or high) depending on age (Rutanen, 2012, p. 209). Transitional times, such as 'getting dressed to go outside' were also controlled and teachers structured space and time to ensure that children participated in these transitions as part of small groups. This is consistent with the findings of Markström and Halldén (2009) observational study of children's strategies for navigating tensions between collective and individual interests in two Swedish centres. They reported "highly routinised rhythm during the day... [whereby] timetables and routines determine[d] what activity should be taking place and at what specific time" (p. 115).

Rutanen (2012) also found that activities with flexible objectives and locations (such as free play) allowed for more negotiation between adults and children about children's use of space. For example, while teachers in the study centre created discrete functional areas within each of three rooms available, children "reshaped this spatial layout by carrying the objects to different locations" (p. 207 see also Markström & Halldén, 2009). In contrast to the structuring of daily routines such as sleep and lunch, teachers sometimes responded to children's play initiatives by rearranging the environment to support children's actions, apparently accepting that toddlers, for example, like to transport materials (Rutanen, 2012). At other times teachers reinforced the spatial codes they had created to structure children's activity by allowing materials to remain in a new location for a period before suggesting possibilities for 'appropriate use' in the new location, or suggesting a 'more suitable' location (Rutanen, 2012). In these examples, the success of children's efforts to 'act on' or transform space can be seen as being enabled or constrained by teachers' responses.

Teachers' responses were influenced by wider factors associated with centre rhythms such as routines (sleep and lunch) and the 'mood' of the group. For example, teachers restructured the space more frequently when there was a lot of movement among children, or signs of crowding or conflict (Rutanen, 2012). In these situations, teachers sometimes restructured space to create smaller groups by inviting children to certain locations or asking them to choose between different spatial locations, and doors were occasionally closed to maintain these smaller groupings (Rutanen, 2012). This suggests that children not only had fewer opportunities to re-structure space during routines such as sleep and lunch but also at times of high density or crowding. The idea that children's options vary according to the rhythms of the day also reflects Skånfors et al.'s (2009) findings that children's own choices to withdraw socially were enabled or constrained by "room availability, time of day, number of children and whether there is free play or teacher-led activities" (p. 106). Additionally, less flexible routines, such as sleep and lunch, were shown to involve particularly high levels of spatio-temporal structuring in several studies (Gallacher, 2005; Nothard et al., 2015; Rutanen, 2012, 2017).

Spatial structuring during routines such as sleep and lunch may be influenced by the size or configuration of physical space to a greater degree than during play periods. Here, I describe two other studies that helped to inform my research. In Australia, Nothard et al. (2015) observed 54 children's sleep practices in four ECE centres (44–63 months of age) and interviewed children about their experiences. Only one of the four centres had a separate room available for sleeping. In the other three centres children needed to rest or sleep in the main activity space. Here, they participated in teacher-led and quiet activities or were required to lie still on beds for up to an hour and a half (Nothard et al., 2015). Nothard et al. (2015) found that children were "selected, directed and controlled" (p. 435) during these routines, and children who were assigned to rest or sleep in the activity space (as opposed to designated sleep rooms) were more likely to perceive that they had no choice or personal autonomy during sleep/rest times. Although this study did not link sleep-time practices to the physical space, the requirements that 'non-sleepers' remain quiet for extended periods when resting in activity space suggests a concern to reduce noise levels in such spaces. Relationships between 'activity space' and noise and distraction during sleep times were also noted in Gallacher's (2005) account of the social geography of 45 children (22 to 31 months old) in a Scottish nursery. Gallacher (2005) explained that the 'L' shape of the activity space was advantageous during sleep times because it restricted visibility between groups of children and minimised the risk of disturbance. As a result, parts of this room were coded differently according to whether children were 'sleepers' or not. Those who slept were situated on mats in the book area, while others were restricted to the other end of the same room (around a slight corner).

Gallacher's (2005) study also demonstrated how adults classified and reclassified the children's space throughout the day so that spaces shifted from being 'out-of-bounds' to available. As part of these on-going shifts, toddlers attempted to "appropriate and reconfigure space and time for themselves" (Gallacher, 2005, p. 243), and this brought them into negotiation with adults. As children worked together to use equipment and spaces in unauthorised ways, and usurp the rules and the centre routines, Gallacher observed the emergence (and flourishing) of a definite peer group 'underlife'. The 'underlife' was visible when children used their knowledge of the way space and time were structured to "take advantage of opportunities that [arose] in the course of the

official routine" (Gallacher, 2005, p. 256) or to 'work the system'. Gallacher (2005) concluded that the "official world organised by adults and the peer culture 'underlife', were not autonomous of one another but are intricately intertwined" and constantly jostled together (pp. 258-259).

These studies demonstrate some of the ways in which institutional routines and rhythms can structure children's everyday actions. They also show how the interplay of programme goals, routines, centre rhythms and teachers' responses to factors such as crowding can enable or constrain children's opportunities to negotiate their use of space and time. The four studies (Gallacher, 2005; Markström & Halldén, 2009; Nothard et al., 2015; Rutanen, 2012) discussed in this final section suggest that children have more opportunities to appropriate or transform space during periods of play as opposed to during pre-planned routines such as lunch and sleep, although Gallagher (2005) illustrated how very young children can also use rules they have learned about these 'official routines' to appropriate and reconfigure space and time. Although some implications about the role spatial complexity may play in the ways space and time were structured can be assumed, none of these four studies explicitly addressed how the size or configuration of the physical space impacted on children's opportunities to negotiate their use of space and time. These questions are important to help understand how children's "agency, actions or perspectives" (Hackett et al., 2015, p. 4) can contribute to the production of space.

Implications for my research

Literature about relationships between physical space and children's lived experiences in ECE centres has revealed that well-defined or organised space *within built environments* can have a positive influence on children's competence and social interactions. However, how the size or configuration of the built space that is freely available to children interacts with teachers' structuring of space, or with the opportunities children have to 'act on' or transform space have not been well explored. Literature also suggests that visual and spatial connections play a role in the quality of very young children's social interactions but, with the exception of Hackett's (2012) work about how toddlers use spatial experiences and mobility as a communicative tool, there has been little focus on how these connections impact on children's friendships, or

how the size or configuration of the built space enables or constrains toddlers' mobility or visual connectedness. My research contributes to opening up this relatively under-explored area of work.

In addition, the literature suggests that architecturally separated rooms can provide opportunities for older children to participate in small groups and protect their interactive space. However, the question of what else these rooms afford children in terms of their everyday experiences in the collective context of an ECE centre remains underexplored. Further, there has been limited exploration of how toddlers protect their interactive space in spatially complex environments, or how teachers' organisation of space and time influences the use of enclosed rooms. The contribution of physical space to children's feelings of crowding and their strategies for responding to these feelings remain only partly answered, as do questions about how diverse physical spaces may influence power relations among children or between adults and children. Finally, since previous studies about noise in ECE centres measured fluctuations in dB over the course of a day – rather than in specific physical spaces – questions about how the physical size or configuration of children's activity space in ECE centres, and people's associated spatial practices, impact children's experience of noise are also under-researched.

In summary, in order to gain a more nuanced understanding of how the size and configuration of activity space impacts children's agile and dynamic use of space in mixed-age, all day ECE centres, it is pivotal to focus attention on how children occupy, transform, and socially engage in *spatially diverse centres*, and on how teachers' conceptions of space enable or constrain children's spatial practices in these contexts.

In Chapter 3, I discuss the theoretical and conceptual basis I adopted to investigate these issues in my study. I explain how I used Lefebvre's (1991) theorisation of space – including his spatial trial of perceived, conceived and lived space – and his notion rhythmanalysis (Lefebvre, 2004) to gain insights into the patterns of children's spatial practices in diverse settings. I also introduce Gibson's (1979) theory of affordances as an additional lens for understanding the agency of children and teachers in the interplay of Lefebvre's (1991) three dimensions of space. These theoretical approaches highlight

how the social-material interplay involved in the production of space may influence children's lived experiences.

Chapter 3

A THEORETICAL AND CONCEPTUAL FRAMEWORK FOR EXAMINING CHILDREN'S LIVED EXPERIENCES IN ECE CENTRE BUILT ENVIRONMENTS

"…recognizing the role of space can enhance understandings of children's ordinary, everyday experiences."
(Hackett et al., 2015, p. 1).

In Chapter 2, I identified a number of limitations in how the interplay between children's everyday experiences and ECE physical spaces has been researched and understood thus far. Although a small number of studies in the area of children's geographies have focused on children's everyday experiences, research about *very young* children's use of space is an emerging theme that remains limited in its scope (e.g., Gallacher, 2005; Hackett, 2012; Holt, 2016; Horton & Kraftl, 2011; Rutanen, 2012; Satta, 2015). In their seminal book *Theorising Childhood* James et al. (1998) argued that to better understand childhood's (social) space, a "systematic exploration of its formative materiality" was needed (p. 54). At that time they acknowledged an emerging focus on childhood space from the field of social geography of childhood (see Sibley, 1995; G. Valentine, 1996). However, in relation to physical space, childhood sociology has tended to privilege adult agendas that focus on educational outcomes rather than children's everyday experiences, although some research has revealed aspects of how children use space as part of broader findings (e.g., Skånfors et al., 2009; Stephenson, 2009b). Across the disciplines of children's geography and childhood sociology there remains a scarcity of research that draws on children's perspectives to explore how the size or configuration of physical space influences children's lived experiences in all-day ECE contexts, or that focus on very young children's contributions to the construction of their own social spaces in these settings (cf., Gallacher, 2005; Rutanen, 2012; Satta, 2015).

With this in mind, and having adopted a constructionist paradigm for my research (see Chapter 1), I found Lefebvre's (1991) theorisation of space as *construction,* produced

through a social-material interplay, consistent with this paradigm. In this chapter, I explain Lefebvre's (1991) spatial triad of perceived, conceived, and lived space – three overlapping dimensions through which space is produced, and Lefebvre's (2004) notion of rhythmanalysis which views the rhythms of everyday life as being entwined with the production of space. I will also explain key aspects of James Gibson's (1979) theory of affordances which I use to provide an additional lens for understanding teachers' and children's agency in the interplay the three dimensions of Lefebvre's (1991) spatial triad. I explain how this theoretical base provides a conceptual framework for my research, situated at the intersection of children's geography and childhood sociology.

I begin this chapter by drawing connections between constructionist approaches within the two fields of children's geography and childhood sociology. I outline some key challenges currently facing these two areas of study, including critiques of the 'socially constructed child', the role of materiality and a tendency towards theoretical dualisms. I then broadly explain current theorisations of space before I describe Lefebvre's (1991) spatial triad, his notion of rhythmanalysis (2004), and Gibson's (1979) theory of affordances. I outline their possibilities for enriching my analysis before narrowing my discussion to young children's spaces to further demonstrate how these broad theories relate to the study of very young children's lives in ECE centres.

Connections between constructionist approaches, children's geographies, and childhood sociology

As discussed in Chapter 2, space has been conceptualised in diverse ways across disciplines including psychology, architecture, and geography. Although methodological divides are evident, previous views of space as a pre-existing 'container' that determines people's social lives have failed to recognise the social, real, and produced aspects of space (Robertson, 2010). There is now wide agreement across disciplines that "space entails far more than physical or geographical dimensions; it is also socially and experientially constructed" (Sumsion & Harrison, 2014, p. 3; see also Middleton, 2014). This spatial turn has opened the way for greater recognition of people's contributions to the construction of space, and for their contributions to be understood as occurring in contexts that enable and constrain particular practices, rather than being determined by physical space (Gallacher, 2016).

In addition to shifts in spatial theory, major paradigm shifts in childhood sociology (see Chapter 1) have foregrounded two key ideas: childhood as a social construct and children as social actors. The conceptualisation of childhood as a social construct "provoked geographers to examine sociospatial differences in the construction of childhood…" (Ansell, 2009, p. 190). In addition, the conceptualisation of children as social actors has led some researchers in childhood studies and geography to focus on children's contributions to the construction of childhood spaces (e.g., Gallacher, 2005; Hackett, 2012; Satta, 2015; Vuorisaloa, Rutanen, & Raittilaa, 2015). Sociocultural theory has further elaborated the idea of children as social actors by placing emphasis on the role of children's contribution to social interactions in the construction of meaning (S. Edwards, 2003; Smith, 2013).

Although the paradigm shift in childhood sociology has been acknowledged as providing an important counterpoint to biological reductionism, accounts of the 'socially constructed child' have been criticised for being too narrow in their focus on human action and privileging a discourse that is silent or vague about materiality, and therefore underplaying the role of biological development and space (e.g., Prout, 2000; Prout, 2005; Woodhead, 2009). Prout (2005) has argued that society can instead be seen as "produced in and through… a wide variety of shifting associations (and disassociations) between human and non-human entities" (p. 109). Calls to reintegrate material discourses "whether it be architectures, artifacts, technologies, or other" (Prout, 2005, p. 63), and to rethink accounts of materials as "indifferent stuff" (Whatmore, 2006, p. 602) have resonated across the fields of children's geography and childhood sociology.

While not rejecting social constructionism, the study of children's geography has played an important role in "imbu[ing] new social studies of childhood with a sense of spatiality" (Holloway & Pimlott-Wilson, 2011, p. 13) and some researchers have responded by increasingly including materialist perspectives that recognise relationships between children, physical materials, spaces and other entities such as bodies (the biological) in the construction of contemporary childhoods (e.g., Gallacher, 2005; Hackett, 2012; Holt, 2016; Horton & Kraftl, 2011; Rutanen, 2012).

In his critique of accounts of the 'socially constructed child', Prout's (2005) is careful not to position his argument on one side of a dualism between 'childhood as social construct' (which tends to overlook materialist perspectives) and 'childhood as natural' (which tends towards determinism in relation to the influence of physical space, materials, and biological development). As Prout (2011) notes, dualisms have a tendency to exclude "all that lies beneath and between them" (p. 8) and to overlook their mutual dependence. A desire to avoid dualisms has also directed my research towards theoretical and methodological approaches that transcend constraining divides and dichotomies and enable diverse ideas and concepts to be examined for their potential to illuminate (see also Brooker & Edwards, 2010; Moss, 2007; Prout, 2011).

My aim of capturing children's lived experiences involves getting as close to these direct bodily and social experiences as possible. I view materials, bodies, and embodied emotions as a "real state of affairs" although the subjective meanings assigned to them may differ according to social context (Harris, 2008, pp. 232-234) and individual factors. For example, children's 'tired bodies' and sleep (or lack of it) are a potential reality that can be confirmed through a range of collated data, rather than being seen as abstract meanings that are "detached from direct living" and which reduce children's reality into thought only (Alderson, 2016, p. 202). These affective aspects of lived experiences are at the heart of the theorisation of space (and vice versa) because "...all social relations become real and concrete, a part of our lived existence, only when they are spatially 'inscribed' - that is *concretely represented* - in the social production of space ..." (Soja, 1996, p. 46, emphasis in original). These ideas begin to illustrate why spatial theories provide a strong platform for my research.

Theorisations of space

Philosopher Henri Lefebvre (1991, 2004), and geographers Doreen Massey (1992, 2005) and David Harvey (2006), have been credited as some of the theorists who have transformed our understanding of space from a geometrical/mathematical concept to a more critical understanding that draws together its social, relational, material and produced aspects (Robertson, 2010). Idealised (mental) representations of space that foreground abstract concepts (such as the previous geometric/mathematical view of space) bear little relation to "the space of people who deal with material things"

(Lefebvre, 1991, p. 4) and instead occlude physical space (materiality). According to Lefebvre (1991), idealised space also obscures social relations that are part of the production of space, including the role that capitalism and the state play in its production.

In his efforts to work beyond the binary of materialism and idealism, Lefebvre aimed to bring social and material relations together in the ongoing production of space. This contributed to his theorisation of space as a social construction that, instead of being understood as 'a thing', should be understood as "a set of relations between things" (Lefebvre, 1991, p. 83). This includes human bodies which, through their entanglement with other aspects of the material environments can be seen to emerge as hybrid entities (Kraftl, 2013; Mannion, 2014; Prout, 2000). Merleau-Ponty (1962) introduced the phenomenological idea of 'being-in-the-world' and the 'lived body' as an important conduit of knowledge (Bartos, 2013). Ingold's (2011) notion of "human-being-in-its-environment" develops this idea by viewing humans as *already embedded* in their environments (rather than beyond), so that bodies respond to space (and other materials), and space responds to bodies, through an ongoing interplay (pp. 178-185). Through this lens, a body's experience of 'being in' the world is co-constructed with the environment (Ingold, 2011, p. 390). Viewing space in this way means that, while space is socially constructed, the social must also be seen as spatially constructed (Massey, 1992). So, while society is constructed spatially, its spatial organisation also influences how it works as part of an *ongoing interplay* (Massey, 1992).

Massey (2005) foregrounds the notion that space is also a *fluid* production. She explains that, since humans, other animals, continents, and plant life are always on the move (migratory journeys, tectonic plate movement, seed dispersal and so on) earth and life change and evolve in relation to each other (Massey, 2005, p. 138). Therefore, because spatial connections between people are constantly shifting, "space is not static, nor time spaceless" (Massey, 1992, pp. 79-80). When we consider space and time together (space-time) we can understand space as "the outcome of past actions… [that permit] …fresh actions to occur, while suggesting others and prohibiting yet others" (Lefebvre, 1991, p. 73). This fluidity opens space to possibilities for change and is important because it not only draws attention to its unfinished nature and possibilities for change

but also to the contested aspect of space that makes it inherently political and therefore subject to power and hegemony (Massey, 1992, 2005).

In relation to power, Lefebvre suggests that lived space is dominated by the representations (signs, symbols, discourses) of those in power: "scientists, planners, urbanists, technocratic subdividers and social engineers..." (Lefebvre, 1991, p. 38). However, the possibility for fresh actions to occur (when space is understood as fluid) enables unexpected practices, not only to occur, but also to contribute to new representations of space (Lefebvre, 1991, p. 73). This notion of fluidity is important for my research because it helps me consider how space may be negotiated between adults and children, and among children, over time and how possibilities for change that are opened up provide opportunities for children to contribute to the construction of space.

In the next section, I explain in more detail Lefebvre's (1991) spatial triad, his notion of rhythmanalysis (2004) and Gibson's (1979) theory of affordances. I demonstrate how together these theoretical ideas provide a conceptual framework for my research.

Developing a theoretical framework for this research

Lefebvre's spatial trialectics

As I have already explained, Lefebvre's (1991) theoretical approach to knowing space, and to exposing how it is produced, unites three epistemologies or dimensions of space. These have been compared to 'three cameras projecting simultaneously' because they are interwoven and work simultaneously in relation to any event or social practice (Zhang, 2006, p. 222). The three dimensions of Lefebvre's spatial triad are (i) material spatial practice or *perceived space* which consists of the observable, concrete, and physical aspects of space; (ii) representations of space or *conceived* space which refers to the conceptualised, mental, or imagined space; and (iii) representational spaces or *lived* space which is "the space as it is directly lived through its associated images and symbols" (Lefebvre, 1991, p. 38). Each lens produces different data and perceived, conceived, and lived spaces overlap to produce social space. *Lived* space is the result of the dialectical relations between conceived and perceived spaces; it embodies both of them without being reducible to either (Zhang, 2006, p. 221). This is the space of subjective, bodily lived experiences, of: meaning-making, feelings, imagination and

understandings of the space as people directly encounter it, and how I have approached my examination of 'lived experiences'.

In relation to an ECE centre, *perceived* space includes people's movements, the physical furniture, locations, lighting, noise, walls and so on. *Conceived* space includes culturally constructed meanings, such as signs that represent particular understandings of 'childhood' or 'learning' that are evident, for example, in the ways spaces and furnishing are arranged, or in the provision of child-sized furniture. Conceived space includes codes about expected 'space use' conceived by teachers, architects, curriculum documents, or by children themselves. For example, rules about being quiet or noisy, or who can use physical space and for what purpose. Lived space is "directly experienced social space" (Rutanen, 2014, p. 18). This is space as children directly encounter it, encompassing children's subjective, bodily, and affective experiences and provides a conceptual lens for exploring lived experiences.

Lefebvre's (1991) spatial triad emphasises the *process* of the production of space that occurs through the relational interplay of perceived, conceived, and lived space. By refusing to privilege one dimension over another, the triad avoids the conceptual dualism of idealism (mental space) and materialism (physical space) although, as I explained earlier, Lefebvre (1991) does suggest that the representations of those in power dominate lived space through their dominance of conceived space (such as signs, symbols, and discourses). However, because space is continually being produced, the possibility for fresh actions to occur enables unexpected practices to contribute to new representations of space (Lefebvre, 1991).

Because "the *production of space* [emphasis in original] is … the process as well as the outcome of the process (i.e. the produced social space)…. [space] is *simultaneously* [emphasis in original] a process and a thing." (Merrifield, 2006, p. 521). In relation to an ECE centre, this means that while a centre exists as a 'thing' at a particular point in time, it has been produced through the past relational interplay of perceived, conceived, and lived space. This process has produced a built environment comprised of particular arrangements of walls, footprint size, and daily movements of people (perceived space), representations of 'early childhood education' (conceived space), and children's

everyday lived experiences (lived space). The building itself can be seen "as a material product" of space (Merrifield, 2006, p. 523), a notion that Lefebvre acknowledged when using apartment buildings to illustrate how "space contains space, the visible content of the visible – and boxes fit into boxes" (Lefebvre, 1991, p. 98). Viewing a building as a (temporarily static) whereby from the perspective of the inhabitants of each ECE centre's built environment, the size and configuration of the physical space "… remain more or less inert containers of the plethora of relationships, ideas and practices produced by those who occupy them" (Gallacher, 2016, p. 124) means that the production of space *within* the building can be deciphered by exploring the interplay of the perceived-conceived-lived traid *within* a building over time.

Lefebvre's triad provides a helpful theoretical platform for my research since it enables an examination of the multiple dimensions of space, including the 'nitty-gritty' material-performative details that influence how children inhabit built environments (Kraftl & Adey, 2008, p. 214). However, although Lefebvre's theoretical framework emphasises that the three dimensions of space are relational and work simultaneously, Lefebvre is "tantalizingly vague on the precise fashion in which the conceived-lived-perceived triad interrelate" (Merrifield, 2006, p. 524). Lefebvre's analysis does suggest that he sees a dialectical rather than causal relationships among these types of space and views the body as crucial because bodily spatial practices are *lived directly* before they are conceptualised (Merrifield, 2006). However, "Lefebvre himself admits that his spatial triad is essentially a hollow, abstract device which has to be employed to concrete situations" (Merrifield, 2006, pp. 524-525).

In my research, I therefore sought to answer my research questions about the relationship between built environments and children's lived experiences by examining the relational interplay of the perceived-conceived-lived spatial triad in 'concrete situations'. Additionally, I sought to understand how physical space in particular (perceived space) interacted with socially constructed rhythms in ECE centres over time. To help me to examine this interplay, I adopted concepts from Gibson's (1979) theory of affordances. My goal was to reveal how fresh actions occur that contribute to and transform social spaces, including why, for example, people use spaces and materials for activities other than that for which they were originally intended (i.e.,

conceived space) (Woolley, 2015). Gibson theory of affordances also helped me to consider power relations in the production (and negotiation) of space and children's opportunities to experience agency as part of these socio-material relations (Alderson, 2016; Mayall, 2002; Seymour, 2015; Woolley, 2015).

Before explaining Gibson's (1979) theory of affordances, I return to Lefebvre's theoretical frame and explain his notion of Rhythmnanalysis. In relation to lived experiences, rhythmanalysis enabled me to consider and explain how people's daily rhythms and patterns of space use (for example, through routines in ECE centres) interacted with physical space to influence children's everyday lives, particularly the affective aspects of their experiences.

Rhythmanalysis

Building on the idea that space is a set of relations between 'things' (including bodies) and inseparable from time, Lefebvre's (1991, 2004) drew attention to the way bodily rhythms bring together space and time in everyday life. He argued that everyday life is shaped by rhythms that arise in response to both cyclical repetitions, such as seasonal change and passing of days (cyclical rhythms) and socially constructed repetitions such as mealtime practices or work hours (linear rhythms). The core of his understanding of rhythm is evident in *The Production of Space* (1991) and extended in *Rhythmanalysis* (2004). Elden (2004) has argued that Lefebvre viewed the rhythms of everyday life as being entwined with the production of space because they occur in both space and time, and therefore can be considered as "thought together" (p. vii) – a term also used by Doreen Massey (2005, p. 18).

Within an ECE centre, the situated rhythms of everyday life can be seen as arising from the interplay of repetitive socio-spatial practices, including human groupings, interaction, movement, rest, and activity (Edensor, 2010). Lefebvre was concerned about collisions between natural and biological timescales in everyday life and believed that, in relation to rhythms and the body, the dimension of lived space (encompassing the body) tended to be dominated by linear rhythms. The enactment of these rhythmic practices becomes "choreographed" over time (Haldrup & Larsen, 2006, p. 278). Applied within the context of an ECE centre this means that the centre's situated rhythms

contribute to a kind of 'place ballet', to use Seamon's (1979) term to refer to repetitions of bodily actions involving movement, rest, or encounters that become linked in space and time. An example of this in an ECE centre would be the enactment of lunch and sleep routines.

Lefebvre (2004) contends that socially constructed (linear) rhythms are imposed on us by timetables and other social mechanisms (conceived space). In ECE centres, this can be seen in the spatio-temporal structuring of everyday actions that regulate children's behaviour through rules that are "coded into the routines and classifications of space as well as the temporal use of space" (Rutanen, 2012, p. 201). Lefebvre (2004) has argued that the interplay of linear rhythms and 'natural' cyclical rhythms produce either hybrid polyrhythmia, whereby rhythms influence each other harmoniously, or arrhythmia, whereby they are 'out of sync' and disrupt natural bodily rhythms.

In bringing together space and time in everyday life, rhythmanalysis provides my research with a conceptual tool for considering how the size and configuration of built environments in ECE centres contribute to the production of, and interplay of, socially constructed group rhythms and children's individual rhythms. For example, this approach will highlight the way that, in my study, teachers structured space and time (spatio-temporal structuring) in response to both the availability of physical space and the children's repetitive need for rest and food.

I now return to explain how Gibson's (1979) theory of affordances is used in this thesis as an additional lens for understanding the agency of children and teachers in the interplay of Lefebvre's (1991) three dimensions of space.

Gibson's affordances

Gibson's (1979) ecological approach theorises affordances as *opportunities* offered by the physical or material environment to an organism. For example, a stair (material) affords a person the *opportunity* to climb. Affordances permanently exist but, rather than determining an action, their actualisation depends on the organism's characteristics, such as its body, skills, motivation, or experience (Heft, 1988). For example, because a child needs to be physically capable of climbing, the act of climbing a

stair is based on the co-effect of both bodily and environmental properties. Affordances are therefore transactional person-environment relationships. Actions can also reveal new affordances, and "the perception of new affordances creates new action" (Storli & Hagen, 2010, p. 448). In this relationship, a person can develop by changing the environment and the transformed environment can, in turn, change the person's experiences, emotions, and goals (Lindberg, 2014). In this way, affordances operate as part of a reciprocal, dynamic and ongoing relationship between individuals and the environment (Chawla & Heft, 2002, p. 206; Heft, 2001; Stoffregen, 2003). This relational aspect of the concept of affordances provided me with an opportunity to examine how the conceived-lived-perceived triad interrelated and how this was 'performed' and lived by children and teachers.

In order to enter into a transactional relationship with its environment, an organism needs to perceive an affordance, or "value-rich" (Gibson, 1979, p. 140) object or experience. Because this occurs in culturally and socially oriented contexts (D. Howes, 2005; Kytta, 2002) senses become culturally attuned (Heft, 2001; Pink, 2009). Therefore, the process of discovering and actualising affordances is tied to an organism's cultural and social dimensions. These dimensions mean that to discover affordances children may need guidance from others or they may selectively engage after observing others (Heft, 2001). The actualisation of an affordance may also arise from activities that are performative or exploratory (Chawla & Heft, 2002; Gibson, 1979). Performative activities are those directed toward an object or person for an intended purpose that the actor can usually identify, such as standing on a chair to gain height (Gibson, 1979). In contrast, exploratory activities are actions that aim to discover new properties in the environment and, while they may be purposive or intentional, the discoveries made cannot always be specified in advance. For example, when exploring the properties of a small blanket a young child may cover her head and unintentionally discover its relational property of 'obscuring visibility'. In this way, affordances provide a framework for understanding that people do use space and materials for activities "other than that for which they were originally intended" (Woolley, 2015, p. 166).

Withagen, de Poel, Araujo, and Pepping (2012) have also moved beyond Gibson's original theory by suggesting that, rather than being "mere action possibilities" (p. 253), affordances can also invite behaviour. Invitations, as with affordances, cut across the

subjective-objective dichotomy and exist by virtue of the relationship *between* materials and people. For example, if a pathway leads to a museum installation with a low plinth at its base, adults and children are both likely to actualize the path's affordance of locomotion, but children are more likely to actualize the affordance of climbing offered by the plinth (Withagen et al., 2012). Invitations operate by 'standing out' to children's developmental interests.

Withagen et al. (2012) do not see this 'inviting' character to be a purely mental product (influenced by cultural norms or rules for example) and acknowledge Ingold's (2011) view that culture is not a collection of mental representations residing in the brain and shaping our perception and action. Instead, culture shapes the perceptual-motor skills that grow in the body and attune the individual to certain affordances in the environment. Thus, if affordances are considered in relation to Lefebvre's spatial triad, they can be viewed as existing in the perceived space but being obscured or made visible (stand out) by children's own physical capabilities (biological), play interests, or by cultural meanings about its accepted use (conceived space). In my research, adopting the concept of affordances as a lens for viewing the social-material interplay (that occurs in the process of producing space) helped me to understand the role of physical space in ECE centres within this interplay.

Finally, the actualisation of affordances during an activity can be related to emotional states that are experienced or remembered in relation to the activity. Christina Ergler (2012) has termed this effect the "emotional aspect of the perception of affordances" (p 67). In relation to my research, this means that children can "learn to perceive certain affordances as positive or negative" (Ergler, 2012, p. 67) depending on their subjective experiences of particular places. For example, a small enclosed room may provoke positive emotional affordances for a child who has experienced it as a 'refuge' from noise and social activity, while the same room may provoke negative emotional affordances for a child who has experienced it as a place of social exclusion, or loneliness. Children's meaning-making may change depending on context, wider social norms and rules (conceived space), and children's dispositions and changing interests (Ergler, 2012) This means that emotional affordances arise, in part, in response to social norms or rules. In relation to Lefebvre's (1991) spatial triad, emotional affordances

could be seen as being actualised through children's lived space – space directly lived through its associated images and symbols.

The theorisation of children's space

Before narrowing my discussion to children's space and further demonstrating how the broad theories I have discussed relate to the study of very young children's lives in ECE built environments, I briefly address distinctions between concepts of space and place and explain my approach in using this terminology in this thesis.

Space and place: defining terms

A cross-disciplinary resurgence of the term 'place' has led to its ubiquitous usage (Cresswell, 2015) and writers on space and place have used these terms in a range of ways (Hackett et al., 2015). To some, 'space' remains understood as an empty container or backdrop, whereas 'place' is bounded or pinpointed space that has been assigned meaning by people (e.g., Agnew, 1987; Cresswell, 2015). Under this interpretation, 'space' to one person may be a 'place' to another and vice versa. Attempts to draw the natural world back into this socially constructed view has led to definitions of place using the notion of 'fixity' to distinguish it from space, so that place becomes a *location* where "the social and the natural meet" (Dirlik, 2001, as cited in Massey, 2005, p. 137). However, as already described, space is fluid. For Massey, this fluidity means that 'place' is the 'throwntogetherness' of entanglements of human and non-human trajectories and, as such, its making involves negotiation to create an agreed 'here-and-now'. Under Massey's reading, 'place' is a political *event* because it demands negotiation (Massey, 2005, p. 140). Massey's (2005) view overlaps with Lefebvre's accounts of *space* as an ongoing construction that draws together social, material, and lived aspects. In this thesis, I have chosen to use the term 'space' and to adopt Lefebvre's usage. However, I use the term place when I refer to a specific named site (such as a particular ECE centre), or when I discuss research that uses the term 'place' (for example, Rasmussen (2004) discusses 'places for children').

Theorisations of young children and space

In a world in which space is often understood as 'adult territory' (Jenks, 2005, p. 74), ECE centres are specially designated 'spaces for children' (Jenks, 2005). Kim Rasmussen (2004) has distinguished between 'places for children' and 'children's places', with the former referring to places designated by adults for children, and the latter to those places children might produce for themselves. These descriptions reflect differences already discussed in this chapter between conceptualisation of space as a 'container' (for example, for children's 'learning') and space as an ongoing social and relational production (to which children contribute). This more expansive notion of space – both material and lived – informs my approach to researching interactions between built environments and children's lived space.

Adults' relegation of young children to particular spaces reflects socio-spatial practices that privilege some groups and marginalise others (Sibley, 1995); they also reflect power relations inherent in the political and contested nature of space (Massey, 1992). The traditional view of children as 'becoming' described by James et al (1998), means that spaces for children have been largely conceptualised as spaces that ensure children's safety, 'normal' or healthy development, and their potential as productive citizens (Moss & Petrie, 2002). However, re-conceptualisations of children as both 'being' and 'becoming' (Uprichard, 2008), and as social actors and 'current' citizens who contribute to the construction of spaces, also reflect shifts in the theorisation of young children's spaces; as discussed earlier, researchers increasingly conceptualise children as contributors in the production of space.

While this shift is welcome because it recognises children as active citizens, use of the 'child-as-being' analytical frame (Qvortrup et al., 1994) can position children *either* as agents of their own destiny who are independent of adults or as marginalised or excluded by adults (Waller, 2006, p. 93). This side-lining of adults can limit possible research narratives because both accounts of the "adults as-oppressors versus children-as-resisters" dualism play down the adult dimension (Mannion, 2007, p. 413). In reality, young children's contributions to their ''own spaces'' may or may not involve immediate engagement with adults, but the context for their participation is invariably mediated by adults (Waller, 2006). Gallacher's (2005) work has highlighted that, rather than adults'

and children's contrasting agendas resulting in conflict between conceptualisations of an ECE space as a 'place for children' or as a 'children's place', the adults' and children's *negotiation* of space can result in their *accommodation* of each other's interests. This suggests that while "young children cannot be separated out from the space they inhabit" (Gallacher, 2016, p. 125), neither can the intersection of their experiences with adults.

Theoretical and conceptual framework: a summary

I chose to explore how ECE centres' built environments interact with children's lived experiences by adopting a constructionist paradigm (see Chapter 1). Lefebvre's (1991) theorisation of space as a construction produced through a social-material interplay is consistent with this paradigm and provided a useful theoretical platform for my study since it enabled an examination of the interplay of multiple dimensions of space over time. Additionally, Lefebvre's (2004) notion of Rhythmanalysis enabled me to explain how people's rhythms and patterns of space use interacted with physical space to influence their lived experiences. However, since Lefebvre has not fully addressed the fashion in which each aspect of his spatial triad interrelate, Gibson's (1979) theory of affordances is used to provide an additional lens for understanding teachers and children's agency in the interplay the dimensions of Lefebvre's (1991) spatial triad. Together, this theoretical base provides a conceptual framework for my research.

Chapter 4

METHODOLOGY

My focus on lived experiences has pointed me towards an ethnographic and participatory approach because it enables me to study the world from the "perspective of the interacting individual" (Denzin & Lincoln, 2000b, p. xvi) by gathering data from within the cultural context of daily life. Consequently, my research strategies aimed to produce 'thick description' (Geertz, 1973) from multiple perspectives within each ECE centre by immersing myself as a member of a community "while making mental and then written, theoretically informed observations" (O'Reilly, 2008, p. 1). An ethnographic approach also enables analysis and data to interweave – each informing the other. Consistent with these strategies, I chose a generic inductive qualitative model (GIQM) to guide my data analysis that allows for the discovery of new theory, but does not *require* it (Hood, 2007, pp. 4-8).

Understanding that children "have a voice of their own, and should be taken seriously", (Dahlberg et al., 1999, p. 49) led me to the view that research about children's experience must employ methods that offer children opportunities for an authentic and direct voice (Prout, 2005, p. 60). This consideration led me to adopt a "mosaic approach" to data collection that recognises the variety of ways children communicate their ideas (Clark & Moss, 2001). Throughout my study, I nonetheless remained aware of the power imbalances between adults and children in the research relationship (Christensen, 2004; Christensen & James, 2008; Holt, 2004) and that this has particular implications for ethical research practices (Graham, Powell, & Taylor, 2015; Mayne & Howitt, 2015) involving decisions in both the planning and implementation of a project (Mayne & Howitt, 2015).

In this chapter, I describe these research approaches and the measures I took to ensure the ethical care of participants and their data. I begin by outlining the constructionist ontology that underpins my stance towards knowledge production in this research. I then consider issues of power relations and ethics in research and explain how my research approaches responded to these considerations before describing the multiple-

site, qualitative research design that I employed and the data collection strategies used. These included child-led tours, photos, bookmaking, observation, spatial mapping, focus groups, and noise readings. The chapter ends by outlining steps that I took to analyse the data gathered and with a discussion of the limitations of my study and the credibility of my analysis.

A constructionist approach to research

As outlined in Chapter 3, my research is underpinned by a constructionist theoretical paradigm (Holstein & Gubrium, 2008b) with a specific focus on the productive power of the material world as part of knowledge construction (Gallacher, 2016; James, 2000; Prout, 2011). This approach sought to reveal "*how* social realities … [were] produced, assembled, and maintained" (Holstein & Gubrium, 2008a, pp. 374-375), and particularly *how* interactions and relationships between people and materials impacted on children's lived experiences.

Rather than seeking to uncover universal 'facts', the knowledge arising from my research is the result of interpretation of data within its context to create "plausible accounts" (Charmaz, 2006, p. 132). Such accounts are informed by the social and material contexts from which data is drawn, and from the values, power, and biases that I bring to my interpretation (Denzin & Lincoln, 2000a, p. 3). Throughout the study, I was aware of the obligation this put on me to be explicit about "the process of reflecting critically" on myself as the researcher (Lincoln & Guba, 2000, p. 183). For example, as a female European New Zealander who is an experienced early childhood teacher, I shared gender and cultural similarities with the majority of the teachers participating in the research. This familiarity made it easy for me to develop relationships with children and adults in the centres – but I also realised that it could obscure my biases. To acknowledge and challenge my biases I met with a colleague, prior to the data collection period, who helped me confront and 'unpack' them. I identified my belief that 'ordered environments' empower children and, through discussion, I was able to consciously attempt to 'bracket' this viewpoint and take a reflexive stance during the research. I also decided to include some research techniques that did not depend solely on my own interpretation, such as spatial maps and noise data, which acted to confirm or challenge my interpretations.

Finally, I understood that focusing on children's participation would not, *on its own*, necessarily lead to new insights into children's lived experiences (Te One, Blaikie, Egan-Bitran, & Henley, 2014), and that generational differences both influence adults' and children's views of childhood and reflect interdependencies inherent in children's understandings of their own experiences (Mayall, 2002; Te One et al., 2014). Rather than drawing on an epistemology that "assumes that people are transparently knowable to themselves" and risk taking the uncritical view that children, or any person, is the most authentic source of knowledge about themselves (Gallacher & Gallagher, 2008, p. 502), I chose strategies that drew on multiple perspectives and viewed all participants as important contributors to the "relational, partial, and co-constructed" knowledge that my research produced (Lomax, 2012).

Ethics

Power relations in research with young children

After an initial period of "uncritical enthusiasm" for the inclusion of children's voice, challenges inherent in participatory research have been increasingly acknowledged by researchers (Bradbury-Jones & Taylor, 2015; Clark, McQuail, & Moss, 2003; Dockett & Perry, 2007; Gallacher & Gallagher, 2008; Loveridge, 2010). One challenge is to ensure that children's participation is authentic by recognising the variety of ways children communicate their realities (Clark et al., 2003). A second challenge is to consider how children are positioned in research in relation to power, including issues of ongoing consent. Researching with "ethical symmetry" means treating children with the same respect as adults, although methods for achieving this may differ (Christensen & Prout, 2002). In the remainder of this section, I describe how I responded to these two challenges.

Understanding that authenticity involves listening to children's' voice as "an active process of communication involving hearing, interpreting and constructing meanings" (Clark, 2005, p. 491) led me to adopt a "mosaic approach" that assembled research strategies to create as complete a picture of children's perspectives as possible (Clark & Moss, 2001). I chose strategies that drew on children's experiences, interests, values,

and everyday routines (Christensen & Prout, 2002) with the aim of enabling "participant-friendly, rather than child-friendly" research (Truong & Mahon, 2012, p. 77). These participatory approaches were additional to participant observation and helped me to engage in children's lives (Gallacher & Gallagher, 2008). In order to strike a balance between "recognizing [children's] competencies, while maintaining their enjoyment of being involved with the research..." (S. Punch, 2002, p. 337), I maintained a flexible approach and adjusted some methods in response to children's interests and preferences (discussed later in this chapter).

In relation to power imbalances between adults and children, Mandell (1988) has suggested that researchers adopt a 'least adult' role during participatory research to position children, in principle, as no different from adults. Taking a 'least adult' role means rejecting opportunities to exercise power over children while retaining a 'responsible adult' stance in relation to issues of safety. While I initially chose to adopt this role, children's preconceived notions of what adulthood means in relation to power troubled this approach and led me to question its authenticity, as Christensen (2004) had previously suggested may occur. Very young children viewed me as an adult with power despite my explanation that I was 'a visitor' not a teacher. For example, when faced with a dispute between a pair of two-year-olds, both of whom looked towards me for help, I felt that my lack of supportive intervention undermined my ability to develop trusting and authentic relationships with them. In not exerting power I felt that the children viewed me as an unhelpful adult and, possibly worse, one who did not care about them. Instead, as Caralyn Blaisdell (2012) found in her participatory research with children, I adopted different roles from moment to moment, at once being a friend, mediator, or non-authoritarian adult helper. Like Pia Christensen (2004), it wasn't until I interacted with children in a way that resonated with their own existing cultural practices that I felt able to establish trusting social relationships. This illustrated that, while power can be used to dominate children, it can also be an enabling force, and if research is to be respectful of children's agency it must also acknowledge their dependency.

Further ethical considerations

Informed consent is a complex area, particularly in relation to children's involvement. A key issue to consider is the power imbalance between participants and the researcher as an 'expert'. To minimise pressure on teachers to participate, after an initial meeting with the head teacher,[9] I wrote a letter to both the management and head teacher to formally request their expression of interest (Appendix A). This letter was accompanied by information about the research project (Appendix B) and explained my intention to send only one reminder that, if not replied to, would be interpreted as them declining. This enabled people to decline, implicitly or explicitly, without justifying their decision. Once permission from centre management was gained, information about the research project (Appendix B) and teachers' consent forms (Appendix C) were distributed with a letter (Appendix F) and opportunities were made available to meet to discuss the project with groups or individuals. If teachers agreed to participate, this process was then repeated for parents (Appendices B and D and E). The information pamphlet (Appendix B), outlined the project and explained how I intended to manage ethical issues. Both the information pamphlet and the teacher and parent consent forms (Appendices C and D), explained that participant's identities would be protected and assured parents and teachers that could withdraw consent to participate at any stage before the data analysis was completed (30 April, 2016). Consent forms also included options for giving or withholding consent for the use of visual images (see Appendices D and E). All images in this thesis are used with participant's consent, however I have chosen to apply filters to some of these images to protect centres' identities (for example, Figure 5.1).

The views and experiences of children were central to my research aims. From a children's rights perspective, children should have the opportunity to be part of the informed consent process (Conroy & Harcourt, 2009). Following researchers who have developed information and assent forms for children (e.g., Bone, 2005; Stephenson, 2009b; Te One et al., 2014), I created 'child friendly' booklets and asked parents to complete these with children if they thought their child was capable of understanding the letter and answering the questions (Appendix G). All information emphasised that

[9] A face-to-face visit was made to confirm the centre's spatial category. This visit is described in this chapter in the section titled 'research design'.

children could withdraw at any stage prior to the completion of data analysis. Children's desire to withdraw included any indications (verbal or non-verbal) that children did not want to be observed or have their voices recorded. Families were also encouraged to inform me if their child expressed unease about the research, my actions, or presence.

I used a mix of staff and self-distribution of information and consent forms in keeping with expectations of the centres. The amount of time and resources required to fully complete these responsibilities was significant. In the final centre (centre SO), which had the largest number of children, I spent four hours each day for two weeks distributing and collecting consent forms from more than 70 families. When I did engage with the community more extensively (centre SO), I found that it eased the administration, reduced the workload on others, and made me more accessible to parents.

I found that my approach of using children's consent forms left unanswered questions about how a researcher should respond to children who demonstrated a desire to participate after initially declining. For example, similar to Alison Stephenson's earlier experience (reported in Dalli, Te One, & Pairman, 2017), I experienced some older children 'bouncing in' with their forms and immediately taking an interest in what I wanted to 'find out about'. However, in one case a four-year-old boy, Liam, had declined consent by ticking 'no' to three of the five questions. His mother interpreted this as him wanting to respond differently to his twin brother (apparently a common feature of their relationship). After his mother left, Liam almost immediately asked to take me on a tour. I agreed after verbally clarifying his wish to participate (and recording this discussion). I reflected on the possibility that children may regard documentation as unchangeable (Dockett, Einarsdóttir, & Perry, 2012) and on the potential 'hidden' harm in this approach. Moreover, this experience reiterated that consent must also be seen as behavioural and changeable and "cannot be assumed until some observable action is performed" (Gallagher, Haywood, Jones, & Milne, 2010, p. 477).

In understanding broader ethical issues such as avoiding harm and risk (Miles, Huberman, & Saldana, 2014), I remained alert to situations that may reflect poor teaching practice and collected and shared data with participants sensitively to avoid

harm as far as possible. However, this needed to be balanced with concerns for honesty, truth, and authenticity and I ensured that participants' privacy and confidentiality remained respected to allow findings to be reported as fully as possible. Confidentiality was protected on several levels. Pseudonyms were used for centre names, locations within them (such as individual rooms), and for participants. Unless parents had given permission for their children's images to be used in publications or presentations, images were modified to obscure individual identities. All data has been safely stored and is inaccessible to anyone but my supervisors and myself. All participants were assured of their right to withdraw consent at any time, and children's assent was continually sought by my remaining attuned to behavioural signs of assent or dissent.

Research design

A multiple-case study

Case study research design investigates phenomena in-depth and within their "real-world context" (Yin, 2014, p. 16). They are particularly useful when there are many intersecting variables and multiple sources of evidence (Yin, 2014). Multiple-case designs are variants within the same methodological framework. I used a multiple-site approach to enable a comparison of physical spaces. I aimed to give comparative attention to the spatial size and configuration of indoor activity areas by selecting ECE centres through purposeful, maximal variation sampling (Creswell, 2014). In light of this, I based selection on each centre's potential to contribute to an 'information rich' set of cases (Patton, 1990, p. 169).

Selecting the centres – the criteria

I sought centres that represented at least two distinctive patterns in regards to the spatial complexity and size (m^2 per child) of the activity space[10] that was s*elf-accessible* to participant children. Being *self-accessible* meant that children could usually access the space when they chose and without adult assistance or permission. Because a spatial typology of ECE centres has not been developed in New Zealand or internationally, distinctions were based on two criteria I indicated as being significant in Chapters 1 and

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10 Activity area as defined by the Education (Early Childhood Centres) Regulations,1998 (New Zealand Government, 2008).

2. The first – spatial complexity or 'architectural depth' (Hillier & Hanson, 1984) – reflects the connectivity and integration of spaces, and is determined by the number of architecturally separated spaces passed through to get from one point in a building to another. Drawing on a method used by Baum and Davis (1980), I used hand drawn plans of each centre to 'map' the architectural depth of the activity space children could *self-access* to create comparable diagrams of depth. I aimed to select two centres with low architectural depth (open-plan space), and two with high architectural depth (complex space). I refer to these two types as 'open' (or open-plan) and 'complex' in the remainder of this thesis. The second criterion was the size (m² per child) of the indoor activity area that children in the study were able to self-access. Centres of low and high architectural depth were paired to represent both larger and smaller-sized indoor activity spaces (m² per child). The combination of both these criteria created a spatial configuration typology of four types (Table 4.1).

Table 4.1: Spatial typology of the four ECE centres

Spatial configuration		Size of children's indoor activity area
Complex (e.g., renovated house with more than one room accessible to children as activity space)	Small complex (SC)	Smaller space: m² per child (e.g. close to regulated minimum standards)
	Large complex (LC)	larger space: m² per child (e.g. significantly larger than regulated minimum standards)
Open (e.g., modular building with single square room accessible to children as activity space)	Small open (SO)	Smaller space: m² per child (e.g. close to regulated minimum standards)
	Large open (LO)	Larger space: m² per child (e.g. significantly larger than regulated minimum standards)

To sharpen the focus on spatial diversity, I aimed to achieve similarity as much as possible across the following contextual features: adult-child ratios, children's age range, group size, the percentage of qualified teachers[11] (80%+) and their pedagogical approach. Group size is a complex notion that is often confused with centre size (Dalli & Pairman, 2013). I utilised Wilson's (2012) definition of group size[12] as a "specific number of children, distinct from the larger population of children, who are together

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11 Qualified ECE teachers held either a three-year diploma or degree.
12 When undertaking research within a centre, the term 'group size' was additionally be used to describe self-selecting peer groups.

regularly and interact with each other, and with one or more specific staff members in an assigned space" (para., 4). Consistency between all of these criteria was difficult to achieve across the four centres and the final selection had some minor differences which I describe later in this chapter. The final criteria were that: each centre operated on an all-day licence,[13] children could attend *more than 40 hours per week*, and all children able to *self-access* the indoor 'activity area' were *between two and five years* of age.

Selecting the centres and gaining informed consent

Because data on centre size or spatial configuration is not publically available, I used the following three-step process to identify possible centres as study participants.
The Ministry of Education's database was used to identify all-day centres in the Wellington Region. I viewed these centre's websites for clues on spatial configuration and organisational structure (such as opening hours, age range, and group size), I created shortlists of centres within four tentative spatial categories.
I requested to visit these centres to confirm their spatial category and as I explained earlier in this chapter, if applicable, I sent a formal letter to the management and head teacher inviting them to express an interest in the centre's participation (see Appendix A).

Summary of the four participating centres

The following is a brief summary of each centre's built environment, key aspects of their organisational structure, and play culture. I have also included icons to represent each centre type with the aim of providing a quick visual mnemonic device to remind readers of the characteristics of each centre type. In each of the centres, 80% of the teachers were qualified and some children attended 'part-week'. For example, while centre SO enrolled 54 children each day, 70 children attended throughout the week. This proportion was similar across all centres. All of the four centre programmes were based on 'free-flow' play (Bruce, 2001) during which children moved freely between most spaces for long periods of time and, with the exception of some daily routines, activities were seldom timetabled.

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13 The Education (Early Childhood Centres) Regulations,1998 define 'all-day' as operating for more than four hours per day (New Zealand Government, 2008).

Small Complex (SC) Centre

Centre SC was situated in the lower story of a residential villa and comprised three small rooms (Figure 4.3). An average of 21 children (2 to 5 years-of-age) attended daily. Its indoor activity space was 2.6m² per child – 4% above the regulated minimum. Its overall space was 54.7m². The complexity of the built environment obscured line-of-sight from the central room into the *Kauri* room and part of the smaller *Rimu* room on either side. Its main outdoor play area was not visible from most of the indoor space.

Figure 4.1: Centre SC
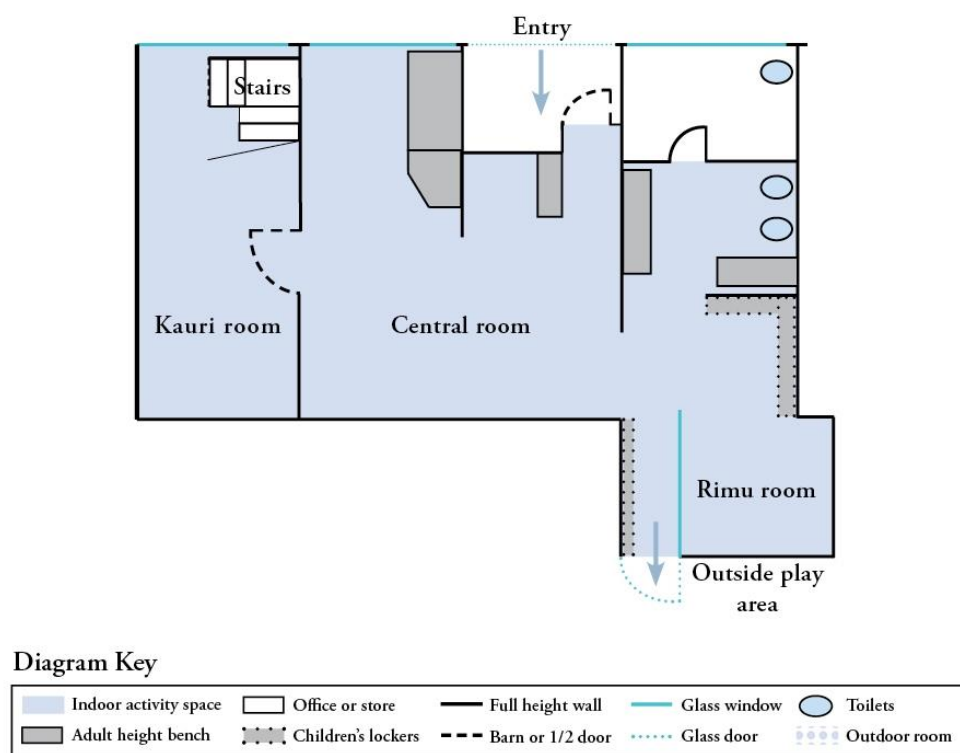
The centre was privately owned, situated in a residential area some distance from shops but close to bus routes, and open from 7.30am- 6.00pm. The teacher:child ratios averaged 1:7. Children under the age of two attended the centre in a separate space upstairs. The kitchen was also situated upstairs. Both younger and older children occasionally visited 'each other's space' with teachers' permission.

There were some structured or teacher-led events but most of the time children had the freedom to choose how and where they played. Boisterous and loud play was not

actively encouraged indoors but children were allowed to climb on chairs and some other furniture, such as shelving.

The outdoor play area was available except during sleep and rest times and was not visible from the main room. The outdoor space comprised a flat area and a deck which led to a sandpit up some steps. A walkway 'snaked up' into the hillside at the back and a 'wild garden' was accessible when a gate was opened by teachers and children were able to explore the 'wild garden' out of teachers' direct line-of-sight. A slide and wide steps at the end of the flat area enabled children access to the hillside pathway.

Large Complex (LC) Centre

CENTRE LC

Centre LC was situated in a large residential villa with several rooms. An average of 27 children (2 to 5 years-of-age) attended daily (Figure 4.2). Its indoor activity space was 3.2m² per child – 28% above the regulated minimum. Its total activity space was $87\mathrm{m}^2$. The complexity of the built environment meant that teachers were not able to see into all the rooms from any one vantage point. Two rooms that were particularly enclosed were the *Flax* room and the *Fern* room. The main outdoor play area was only visible from two indoor spaces and was usually accessed through the main entry near the kitchen.

The centre was community-owned, situated in a residential area close to shops and bus routes, and open from 7.45am – 5.30pm although approximately two-thirds of the children left at 3.30pm. Teacher:child ratios averaged 1:5 meaning that there were fewer children per teacher than at the other centres, or a 'higher' ratio of adults to children. The teaching team was ethnically diverse and two male (unqualified) practitioners regularly relieved at the centre. Children under the age of two years did not attend. The centre had a close relationship with a nearby part-day centre that enrolled children under the age of three and some children from this centre transitioned to centre LC when they turned three years old. Few structured or teacher-led events occurred each day and children had a great deal of freedom to choose how and where they played.

Figure 4.2: Centre LC
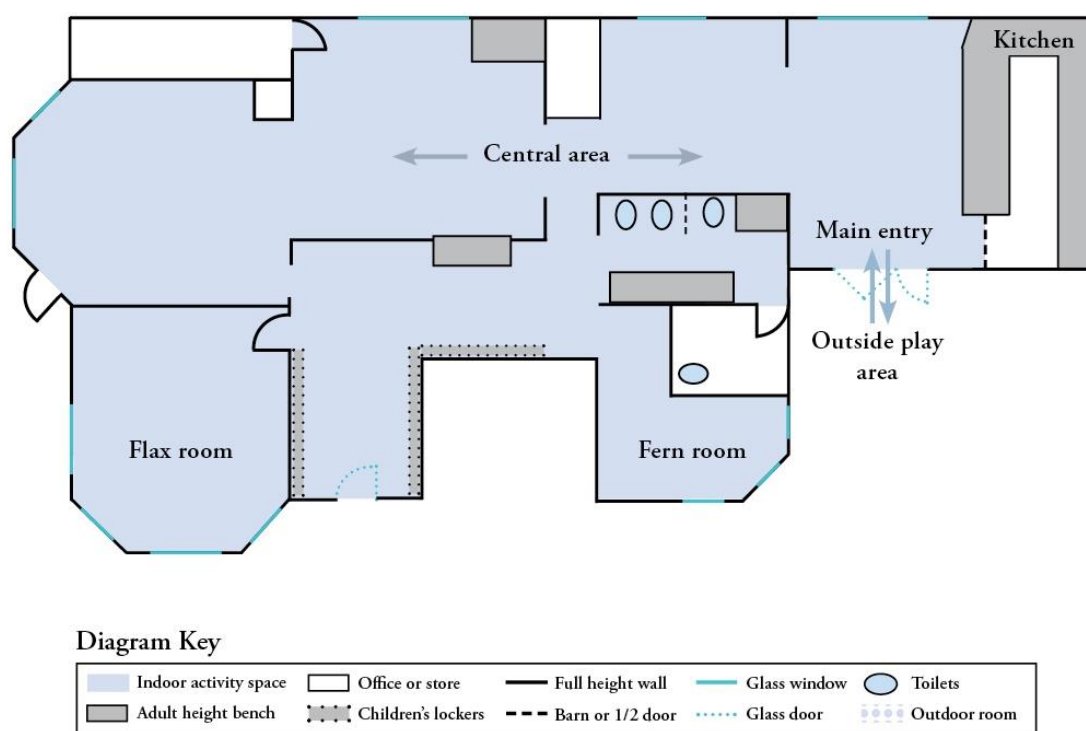
Boisterous and loud play was often encouraged indoors and children were allowed to climb on some furniture such as chairs and couches and to occupy rooms out of teachers' direct line-of-sight. The outdoor area wrapped around four sides of the house, with two sides freely accessible to children most of the time. The majority of the outdoor space comprised a small deck, a flat square area, large sandpit and fort. The outdoor is split level with a lower grass area accessible via steps.

Small Open (SO) Centre

Centre SO was comprised of two single-cell rooms within a larger ECE complex that enrolled over 100 children (Figure 4.4). This centre was similar to the larger modular buildings that include a series of self-contained open-plan 'classrooms' described in Chapter 1. Its two rooms were separated by a kitchen and a shared toilet area. These rooms were each used by separate groups of differently aged children and I chose to study both, rather than one, to enable me to research children from age 2 to 5 years-of-age. The *Tulip* room was occupied by 24 children (from about 2 to 3 ½ years-of-age), and the *Freesia* room was occupied by 32 children (from about 3 ½ to 5 years-of-age). The Tulip

room's indoor activity space was 2.6m^2 per child – 4% above minimum regulated standards. It was 64.03m^2 overall. The *Freesia* room was 2.15m^2 per child –14% below the minimum regulated standard. It was 68.8m^2 overall. Since the regulated minimum space is calculated across the entire complex this space was legally compliant (for example, the baby 'classrooms' had smaller group sizes and were to have had more space per child). The openness of each room meant that all areas within the rooms were visible from one standpoint. A very large outdoor play area was situated close to the indoor space, and large glass doors meant the outdoor play area was visible from inside.

The centre was privately owned, situated in a residential area fairly close to shops and bus routes, and was open from 7.30am-6.00pm. Routines such as meal-time and sleep and rest periods occurred within children's assigned rooms, however mixing between rooms occurred at some other times. Teacher:child ratios averaged 1:9 and were higher in the Tulip room (24 children and 3 teachers) than in the Freesia room (30 children and 3 teachers). Children under the age of two attended in separate rooms in another part of the complex. The older children occasionally visited the younger children's rooms with teachers' permission, but this was rare compared to centres SC and LO; however, children regularly mixed between the Tulip and Freesia rooms.

There were some structured or teacher-led events and children had the freedom to choose where they played at other times. Boisterous and loud play was not encouraged indoors and children were not encouraged to move or climb on furniture (except chairs). The outdoor play area was available most of the time. The outdoor area was visible from both rooms through large glass sliding doors that were open most of the time. The very large outdoor space included fixed and moveable climbing equipment, a slide, sandpit, and a pathway that ran through bush along one side of the perimeter. In addition, children accessed a separate garden with teachers, particularly towards the end of the day. The outdoor area was almost always available except during very poor weather.

Figure 4.3: Centre SC
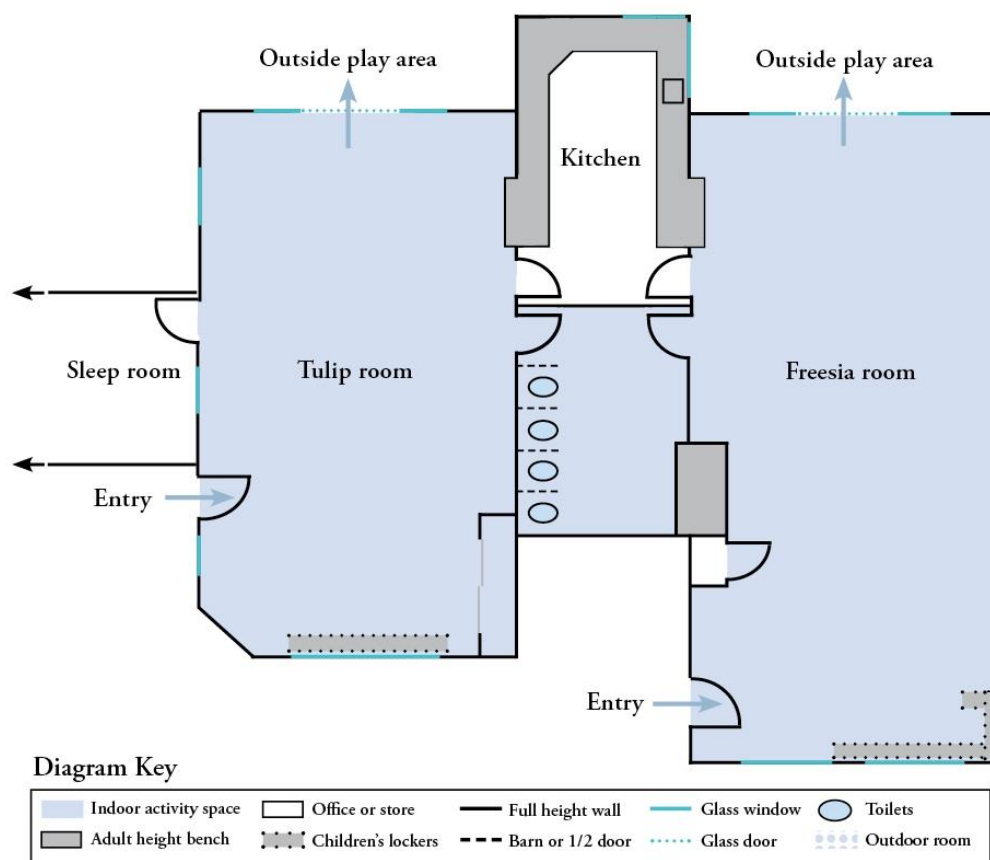
Large Open (LO) Centre
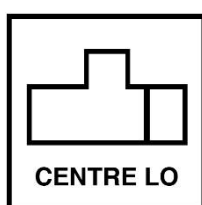
Centre LO was situated on the ground floor of a building that was previously an industrial workshop (Figure 4.1). An average of 24 children (2 to 5 years-of-age) attended daily. Its indoor activity space was 3.6m² per child – 44% above the regulated minimum. This increased to 123% above if the centre's adjoining 'outdoor room' was included in the indoor measurement.[14] Its total indoor activity space was $88.2m^2$ (not including the outdoor room) and comprised a large T-shaped activity area, partially wrapped around a central kitchen. The entrance and locker area were situated at the bottom of the T, as was the entrance to the under two-year-olds' room. The main play area was at the top of the T and was partly carpeted, and partly lined with Lino. It had an unobstructed view

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14 The outdoor room did not meet legal indoor building requirements. It was legally defined as outdoor space and was included in the outdoor measurements. However children had direct access to this space every day, even in heavy rain.

through to most of the outdoor space. Sliding glass doors separated the inside from the outdoor room, and transparent roller doors separated the outdoor room from the uncovered outdoor area.

Figure 4.4: Centre LO
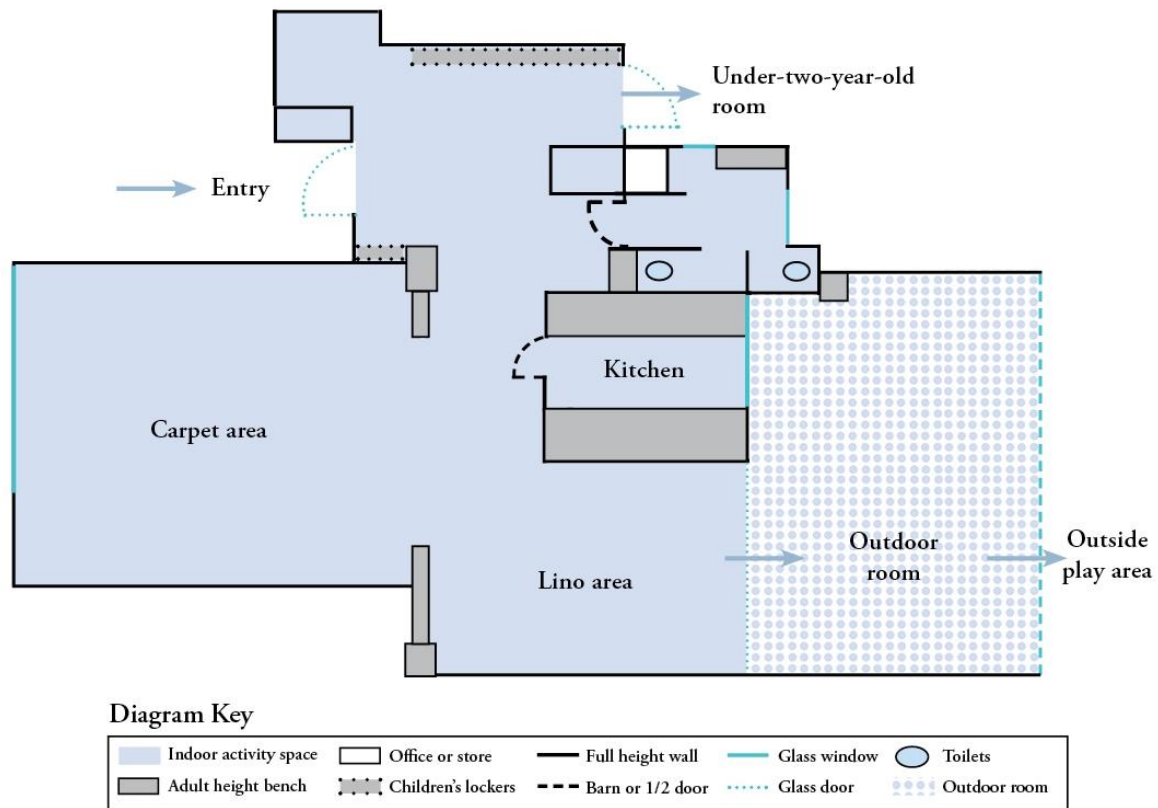
The main play area (at the top of the T) had large windows at the carpeted end making the space very light. Children were taken to the under two-year-old area for nappy changes.

Centre LO was privately owned, situated in the inner city close to apartments, shops and bus routes, and open from 7.30am – 5.30pm. Teacher:child ratios averaged 1:8 and the owner worked as part of the team. Children under the age of two years attended the centre in a separate 'under-two room' (not part of my study). Both younger and older children occasionally visited 'each other's space' with teachers' permission. There were few structured or teacher-led events and children had the freedom to choose how and where they played. Boisterous and loud play was not encouraged indoors. Children were allowed to move light-weight furniture but were usually discouraged from climbing on

it. A small L-shaped outdoor play area was flat, included a large sandpit and climbing boxes, and was freely accessible to children most of the time.

Ethnography

In order to gather the 'thick' data (Geertz, 1973) I required to explore socio-spatial patterns, I used a range of research strategies including spatial mapping, child-led tours, story-book making, photography, observation, teacher focus groups, and noise readings. The following sections explain my reasons for choosing my research strategies, how the data were collected, and why some were modified along the way. All data were collected between April 2015 and April 2016. I begin with a brief overview of my approach to participatory observation.

Observation

My approach to participatory observation was to immerse myself in the activities of centre for extended periods. Each of the four centres was visited between 9 – 14 times over a period of at least three weeks. At least five of these visits in each centre were for the duration of the centre's opening hours (up to 10 hours each day). During the first few days, I spent time in distinct spaces to gain insights into their use and, in response to children's movements and interests, I increasingly located myself alongside groups or individuals - often moving through different spaces and outside with them. While doing this I regularly circulated through other spaces to help me to gain a sense of concurrent activities and shifting patterns of use. After two or three days of observation, I selected a two-year-old, three-year-old, and four-year-old child, each with regular all-day attendance patterns. Selections were based on the centre roll and guidance from the teachers. In the first centre (LO) I selected two girls and a boy and observed them through an entire day. Although my selection of three children meant that gender was not evenly represented, children were part of larger friendship groups and by the end of the research period I felt that I had an awareness of a range of children's everyday practices and interests. However, I also found that it was possible to observe two children over a full day by regularly alternating between them. In the subsequent three centres, I observed a boy and girl *of each age* by adopting this approach (six children). The purpose of this was to gain insight into how children of different age and gender

used space, interacted socially, and participated in centre routines over the course of a whole day.

In addition, throughout the research I took photographs and occasionally videoed events and sequences I considered significant. To minimise intrusiveness I utilised the camera's LCD screen and avoided lifting the camera to my eye. I also asked children (and adults) questions about their experiences at times that were in keeping with the flow of the day and I followed my observation protocols (Appendix H). All observations, conversations, and reflections were documented on a voice recorder. On occasion, I recorded conversations directly, and at other times I moved to an unoccupied space and recorded my own thoughts, observations, or summarised conversations as voice memos. On occasion, I met with teachers during their lunch or tea break for more extended discussions. In addition, children occasionally liked to engage in impromptu 'interviews' whereby they held and spoke directly into the voice recorder.

Spatial mapping

Spatial mapping involved noting the spatial location of each child (and teachers) over time to produce data about movement patterns. The genesis of spatial mapping is in studies of people's movement in urban spaces which in recent times has used Global Positioning Systems (GPS) technology (e.g., Mackett, Brown, Gong, Kitazawa, & Paskins, 2007). However, at the time of my research, GPS lacked accuracy for indoor contexts (Professor Winston Seah,[15] personal communication) so I was unable to use GPS despite my interest in it. Although researching people's movement patterns has been rare in ECE settings, Duncan and Te One (2012) successfully tracked parents' movements at 'pick-up and drop-off' times by adapting a spaghetti mapping ™ tracking method developed by Jacka and Keller (2009, cited in Duncan et al., 2012). In their adapted method, parents were required to 'self-track' and this made it unsuitable for my research which involved large groups of children. Instead, I created an alternative 'by-hand' technique that combined time sampling, photography and 2D maps.

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15 Professor Seah is Professor of Network Engineering at the School of Engineering and Computer Science, Victoria University of Wellington.

While at each centre, I took photos of all spaces at 20-minute intervals between 7.30am – 5.30pm for two days in each centre. Spatial maps were created by marking the placement of each child (including gender and age) and adult as they appeared in the photos on a 2D map of each centre. This was a laborious process but it enabled me to become more familiar with the children's names and the sheer volume of images illuminated children's interests and play patterns that I may not have otherwise seen. For example, one child's repeated use of a space beside some lockers was an 'anecdotal observation' I transcribed from these images and later observed more closely. A series of completed spatial maps showed the location, age and gender of all individuals at 20-minute intervals throughout the centre's opening hours over a two-day period. Each interval's map could be viewed separately, however, I also viewed a series of maps as animations to examine daily movement patterns (see Appendices K, L and M).

Figure 4.5: Example of spatial animation: centre LO

11.20am

11.40am

12.00

12.20pm
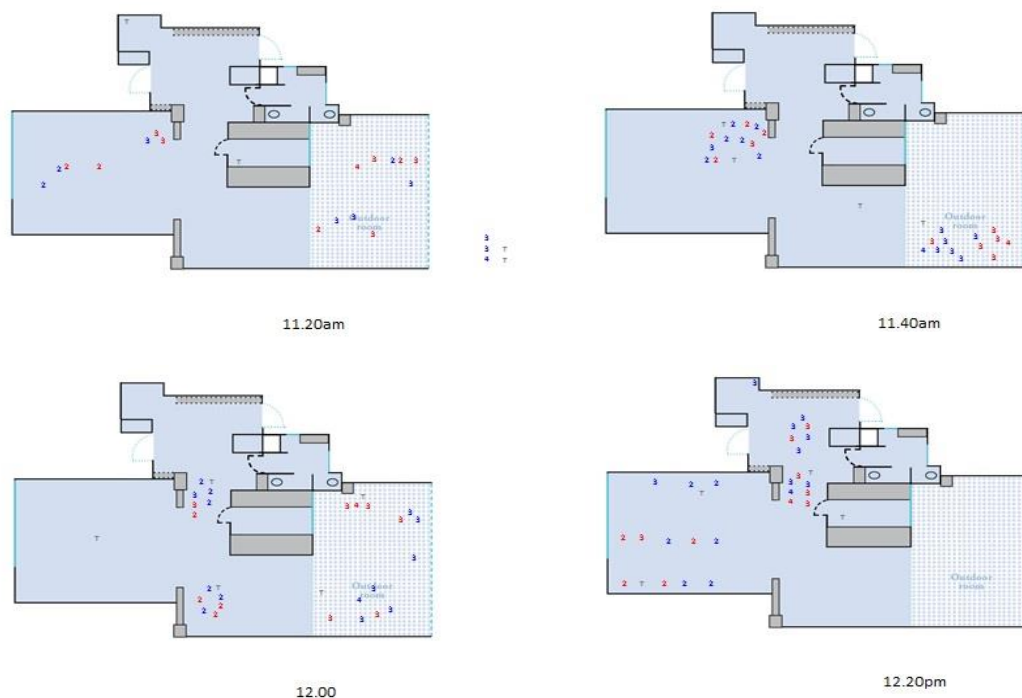
Child-led tours and photography

Child-led tours aimed to provide children with an opportunity to show and describe spaces from their perspective. Such tours have previously been used in research with

children, alongside the use of questions to prompt discussion aim to gain a deeper understanding of children's conceptions and feelings (Clark & Moss, 2001; Horton & Kraftl, 2011). Since smaller group sizes facilitate in-depth discussion, I planned at least three centre tours of between 2-4 children in each centre (C. Edwards, Gandini, & Foreman, 1993, p. 63). Initial tours occurred in response to children's requests to show me around and these tours took on a short impromptu character to fit in with children's play interests. In the first centre (LO), I noted that children tended to take a procedural approach to tours by showing me areas that had named functions such as the kitchen, art area, lockers, and toilets. During these tours I asked children where they went if they wanted to be alone or with 'just one or two friends', or if they wanted to be 'somewhere quiet'. There was a marked difference between the open and complex centres in the way children described spaces and responded to these questions. I discuss these differences in full in Chapters 5 and 6. In response to the children's limited description of space utilisation in the first centre (LO), I decided to incorporate the story book-making strategy into the tours to encourage richer discussion (see below). I continued this practice at the other centres.

Storybook making

I created a book for each centre to prompt conversations and incorporate children's contributions. The book was based on the children's story *The Gruffalo's Child* (Donaldson & Scheffler, 2005), an adventurous character whose gender is seldom mentioned in the original, making it open to possibilities. This strategy built on previous research in which picture books, and books created from children's materials such as

Figure 4.6: Introduction to the Gruffalo Child's story book

It was pouring with rain

The wind started to roar

When the Gruffalo's child knocked at the door

photos and drawings, have been successful prompts for discussion with children (e.g., Carr, 2000; Clark, 2007; Te One, 2007). To sharpen the focus on the *indoor* environment, the book began with an image of the centre as the children would see it when arriving (Figure 4-5). It was introduced with the words "It was pouring with rain, the wind started to roar, when the Gruffalo's child knocked at the door." Children were told that the Gruffalo's child had never been to their centre and were invited to let the Gruffalo's Child in and to tell it about their centre. The book comprised 10-12 pages with photos of the centre's indoor spaces with the Gruffalo's child's image embedded into the image – as though it was present.

As already mentioned, I combined the story-book and child-led tours. At the first centre, I included the children's words, drawings, and photographs into a digital version of the book and displayed this on a data projector to prompt further discussion with a larger group. In addition to being embedded into images of the centre, I embedded the Gruffalo Child's image into some of the children's drawings. However, I felt that the novelty of the situation, coupled with the elements of control inherent in large group contexts limited interactive discussion among the children. The openness of the built environment prevented me from working with smaller groups. Instead, I created a hard copy of the book to maximise opportunities for discussions with small groups and individuals. I wrote children's comments directly into this book and invited teachers to do the same. Every few days I created speech bubbles with children's comments and affixed these (with the child's images) to revisit with children. This method enabled many more opportunities for engagement and re-engagement throughout the research period. It also offered more fruitful 'low key' opportunities for discussion among small groups, pairs or with individuals.

Children's photography and drawing

Inviting children to photograph or draw aspects of their lives has been commonly used in recent years as a way to gain children's perspectives, particularly as prompts for conversations (e.g., Clark & Moss, 2001; Einarsdottir, 2005a; Einarsdottir, Dockett, & Perry, 2009; Stephenson, 2009a). I invited children to take photographs as part of child-led tours with the expectation that conversations about the photos may illuminate children's conceptions and experiences of particular spaces. However, I found that,

although some children did photograph spaces or 'places', most were interested in photographing friends rather than responding to my interests. Children's desire to reinvent this strategy may suggest that I was attempting to take advantage of "children's schooled docility towards such activities" (Gallacher & Gallagher, 2008, p. 506) by asking them to photograph particular topics. I reviewed photos with children in the first centre but this provoked limited discussion about their feelings about – or use of – space and I did not pursue this in the following three centres.

Towards the end of my research in each centre, I also asked children to draw their centre, or parts of it to "show someone who had never been inside it" (such as a grandparent or friend). I sat with children as they drew pictures but found that they tended to draw what was in front of them or pictures of other things such as friends and relations. The associated conversations did not greatly enrich the data. The lack of response in relation to drawing and photography may have reflected the abstract nature of 'space or place', but also the children's apparent preference to interact more directly with me by 'talking and showing' me things. I concur with Cheryl Greenfield's (2004) reflection that "the success of research with young children lies in the watching, listening, reflecting and engaging in conversations; seeking to enter the child's world in just a small way" (p. 4).

Teachers' focus groups

One of the sub-questions guiding my research asked how teachers' conceptions of indoor space and their image of children shape children's lived experiences in all-day centres. To help answer this question, and to share and discuss my emerging data, I held two focus group meetings with teachers in each centre. Focus groups have a number of advantages over one-to-one interviews. They are closer to everyday conversation and often include storytelling, joking, and disagreements. They also enable participants to react to and build on, each other's ideas and this helps to develop and crystallise key ideas (Wilkinson, 2004). The first of two focus group interviews with teachers at each centre was held after the first week of data gathering in the centre. This ensured that the adult perspectives layered onto children's perspectives, not the other way around. This approach responded to Lefebvre's (1991) argument that 'conceived space' (i.e. space planned by the teachers) tends to dominate interpretations of space. Each of the focus

groups followed a semi-structured interview format with questions aimed at exploring teachers' conceptions of space and its role in children's experiences (see Appendix I). A follow-up focus group was used to share and discuss my preliminary findings at each centre after my initial analysis was completed. Teachers' reflections provided additional data and their response to my initial analysis enabled member checking (Creswell, 2014).

Noise readings

Finally, upon recognising that the size and configuration of the built environment directly impacted on noise transfer and that noise had a significant impact on children and teachers' practices and experience, I decided to return to centres at the end of 2015 and early 2016 with the purpose of measuring noise levels experienced by children in different *spaces*[16].

Since McLaren and Dickinson's (2005) previous study of ECE centres had aimed to measure children's exposure to noise over the course of a day, rather than background noise in particular spaces, they had attached sound meters to people. In contrast, I was interested in measuring background noise and measured time average level decibels (L_{Aeq}) in different spaces. I used Tecpel 321 sound level meters with logging intervals set to 5 seconds. Two meters were affixed 10 centimetres from the wall, in *two spaces* concurrently, within each centre. The two meters operated continuously for a nine-hour day in each centre. In the complex centres (LC and SC), I took concurrent readings in (i) an area children had identified as quiet, was separated by at least one full-height wall from other areas, and that I had observed to be quiet; and (ii) a central 'high use' area which was noisier. In the open centres (LO and SO), because children's responses did not indicate a particular 'quiet' area, I chose to take concurrent readings in (i) an area I had observed to be quieter during my initial research period and (ii) a central area of high usage (for example, at the top of the T shape in centre LO).

The instruments produced measures readable at selected points in time or averaged for particular periods of the day. Following McLaren and Dickinson (2005), I took

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16 I am indebted to Dr. Stuart McLaren from Massey University, Wellington for generously sharing his expertise and the University's equipment.

measurements during the course of one full day in each centre. This approach to data collection means that daily variations in children's activity, weather, and other factors limit the generalisability of these results to other days. However, I ensured that measurements were taken during similar weather conditions at each centre and the patterns that became evident in all four centres were consistent with those I observed and videoed, and those described by children and adults.

Table 4.2: Overview of data collection strategies and their purpose

Ques.	Sub-ques.		Data Collection Strategies	Purpose
What is the relationship between the size and spatial configuration of ECE centre indoor activity space and young children's lived experiences?	Background data	I.	Spatial maps that illustrate the size, configuration and key areas.	Provide contextual information to support data analysis.
		II.	Measure noise levels experienced by children in different spaces.	
		III.	Photograph spaces, furnishing, and equipment - both indoor and out.	Help display data and prompt discussion with children and teachers about space use.
	How do children occupy indoor activity space, transform it, and engage socially in spatially diverse ECE centres?	IV.	Observations documented through field notes, voice memos, children's voice recordings, and photographs. Information about contextual features, such as weather or excursions, described.	Provide data about: • how children *occupy* space e.g., kinds of play occurring in particular spaces, who's involved in that play, what happens when 'others' enter a space, why children chose to move to a new area e.g. moving indoor to outdoor. • how children *transform* space e.g., how materials are shifted to create new spaces within an activity/interest area, or to extend play to incorporate a secondary space such as a hallway • how children *interact socially* in spaces e.g., group sizes, how space is used for withdrawal, territorialising space, between group spatial interactions.
		V.	Conversations with children.	Provide data from children's perspectives about spatial practices.
		VI.	Children's photos or drawings of spaces they use for specific purposes, or which engender particular feelings.	Provide provocations to support conversations with children, possibly in combination with 2D centre maps, book making or map making.
		VII.	Child-led centre 'tours'.	Provide data from children's perspectives about how they think spaces are expected to be used, can be used, and the rationale for any rules. Also, to provide data about children's past uses of spaces, and their feelings about spaces – past and present.
		VIII.	Making story book with children.	
		IX.	Tracking children and adult's movements in physical settings using 'by hand' time-sample technique that combines photo images and time.	Provide information about children's and teachers spatial movements. Provide some information about social interaction, particularly group size (i.e. peer groups in particular spaces, and group cohesion across time and space).
	How do teachers' conceptions of indoor space and their image of children shape children's lived experiences in all-day centres?	I.	Focus group semi-structured interview with teachers.	Provide data from teachers' perspectives about: • conceptions of the spaces e.g. how particular activity/interest areas are organised and why, rules around space use and their rationale; • how their conceptions of space link to the centre's philosophy or pedagogical approaches; • how they aspects of the centre's space influence children's experiences, • factors that enable or constrain the children's occupation, transformation, or social interactions in particular spaces, and factors that shape teacher's organisation of space. • what, if financial and practical constraints were removed, would they change, and why.
		II.	Conversations with teachers.	Provide teachers' perspectives about day-to-day spatial practices observed.
		III.	Follow up focus group after initial data analysis.	Provide additional data in response to teachers' reflections, or in response to new questions arising from initial data analysis.

Table 4.2 (on the previous page), illustrates how these research strategies contributed to answering my research question and its two supporting sub-questions:

What is the relationship between the size and spatial configuration of ECE centre 'indoor activity space'[17] and young children's lived experiences?
   a. How do children occupy indoor activity space, transform it, and engage socially in spatially diverse ECE centres?
   b. How do teachers' conceptions of indoor space and their image of children shape children's lived experiences in all-day centres?

Data analysis

The wide range of data gathering strategies I used generated significant amounts of rich and complex data. In order to capture the complexities of the social world and identify regularities or patterns, I needed to find an approach that drew diverse data together in meaningful ways and enabled it to be synthesised to clarify emerging themes. To achieve this, I took on the role of a *bricoleur* – a 'handyman or woman' who makes use of tools available to complete a task (Kincheloe & Berry, 2004). In relation to research, this involves the process of employing "methodological strategies as they are needed in the unfolding context of the research situation" (Kincheloe & Berry, 2004, p. 1).

I used an inductive approach to analysis. Inductive analysis involves moving from the particular to the general and is central to finding regularities or patterns (Miles et al., 2014; Punch, 2014). Its three main components: data reduction, data display, and drawing and verifying conclusions were interwoven throughout my analysis to identify themes, clusters and patterns from which I developed propositional statements. I initially reduced data by transcribing observations and field notes *in their date and time order* into daily word documents with two columns titled 'observations' and 'field notes'. I transcribed these *while concurrently viewing digital images* from the same time periods. Images that illustrated or provided more information about the observations

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17 As defined by New Zealand's Education (Early Childhood Services) Regulations 2008.

and field notes were saved into a separate pre-formatted word document that enabled descriptive text to be entered below each image.

I took a similar approach to transcribing children's contributions to the Gruffalo's Child story, tours and conversations arising from children's artwork and photography. Other incidental conversations with children were transcribed into the 'fieldnotes' section of the word document already described. All focus group meetings were transcribed into separate documents.

I used an open-coding approach to clarify emerging themes (Punch, 2014). Initially, I coded data into areas that were closely linked to the research questions so that initial codes represented 'clusters' of data about children's occupation of space, mobility, transformation of space, and social interactions, and of teachers' conceptions of space. This analysis generated a series of codes which became the tree nodes used with the qualitative data analysis software NVivO™ (QSR International). This enabled contextual factors surrounding observations to remain connected as I moved back and forth segmenting my data in relation to my research questions (Kincheloe & Berry, 2004). Some data were coded to more than one node. Since the initial codes reflected my research questions rather than emerging themes, I developed sub-nodes within these clusters of data and found more linkages and overlaps that helped identify patterns and broad themes. This process highlighted the way aspects of my research questions intertwined. For example, I made links between the range and type of materials available, teachers' conceptions of space, and children's spatial practices (perceived, conceived, and lived space). During this process, I noted some unexpected connections, for example between visibility among very young children and their social interactions.

 After this initial analysis, I returned to the spatial maps. These contributed a visual and spatial understanding of emerging themes such as 'group rhythms'. They also confirmed, and at times contradicted, some observational data. For example, my observations and field notes indicated that adults tended to situate themselves in 'central hub' areas in complex centres and that some children spent prolonged periods in peripheral rooms. Spatial maps confirmed these observations. Finally, I used Testlink SE322 software to download the noise data to a computer. I selected a range of time periods within which

to calculate the average decibel levels $L_{Aeq\,(t)}$ and transferred these to a single chart for comparison. Similarly to the spatial maps, these served to validate emerging themes.

To compare emerging themes across the diverse built environments, I developed a grid to compare practices that were enabled or constrained in each built environment. I began to develop propositional statements from this, and examined the data for evidence that challenged or disconfirmed these emerging ideas, for example by paying particular attention to practices that were inconsistent with those identified in my grid (Punch, 2014). This final step enabled me to crystalise propositional statements that formed the basis of my empirical chapters.

Research limitations and credibility

The validity of a qualitative study relies on whether the findings can be said to be "sufficiently authentic … that I may trust myself in acting on their implications" (Lincoln & Guba, 2000, p. 178). My research approach achieved a "good fit" between components of the study, for example, the way observational data and spatial maps complemented each other. In particular, although mine was not exclusively ethnographic, my use of prolonged observation, immersion in each centre for full days, and discussions with children 'fitted' my research focus on children's lived experiences (Punch, 2005, p. 247).

Because phenomena are interpreted in terms of "the meanings people bring to them" and 'objective reality' can never really be captured (Denzin & Lincoln, 2000a, p. 3), the dependability of findings can be assessed by asking: "How stable are the data over time… [and] to what extent do they converge or diverge?" (Punch, 2014, p. 321). My use of multiple methods enabled me to use different lenses to actively look for confirming or contradictory patterns and to assess commonality across the data. While my study design precluded inter-observer agreement, I member-checked by sharing initial data and emerging themes with teachers and inviting their responses, questions, and critique.

A study's internal validity can be assessed by asking: "How well do the data represent the phenomena for which they stand?" (Punch, 2014, p. 321). In combining children's

perspectives and participant observation, I aimed to gain data that were representative of the central phenomenon: children's lived experiences in divergent spatial environments. An authentic and contextualised picture of children's lived experiences arose through the use of multiple sources of varied data. Qualitative research aims to obtain rich, holistic data (Punch, 2014) and, because this is gained through immersion within particular contexts, it is situated rather than being generalizable. My multiple-case research design has attempted to sharpen the focus on spatial variation by gathering data across contexts that share other similar features (Yin, 2014). Conclusions about practices and experiences that I have drawn from the collective study have resulted in propositions that can be assessed for their transferability to other contexts (Punch, 2014; Yin, 2014). The context of each centre has been 'thickly described' to enable readers to judge for themselves the transferability of findings to other situations (Geertz, 1973).

Finally, because "the experience is 'created' in the social text written by the researcher" (Denzin & Lincoln, 2000a, p. 3), I remain aware of my biases, values, and aspects of my personal background that are likely to have influenced my interpretations of phenomena (Lincoln & Guba, 2000, p. 183). The process I undertook to help me confront and 'unpick' my biases (described earlier) helped me to remain reflexive throughout the research although it is likely that some blind spots and limitations remain. This, in conjunction with inductive processes that sought contradictory data when identifying themes and patterns, and multiple research strategies that included objective strategies, contributed to my research's validity.

In the following three chapters (5 – 7), I describe and discuss my research findings starting with Chapter 5 where I use Lefebvre's (2004) notion of rhythmanalysis to demonstrate how the interplay of physical space, group rhythms, and children's own navigation of space and time, impacted on their lived experiences and how teachers choreographed many of these rhythms in response to the built environment. This is followed in Chapter 6 by a discussion of how the interplay of physical space, social relations, and children's mobility contributed to children's lived experiences. In Chapter 7, I explore how teachers' navigation of tensions between the affordances of each centre's physical space and their images of children influenced the way children used

space in each centre. Chapter 8 draws together threads from these three empirical chapters to address what lived experiences looked like in the centres, and how the physical size and configuration of the activity space influenced those experiences. The analysis and discussion in each chapter is underpinned by consideration of how children's "agency, actions or perspectives" (Hackett et al., 2015, p. 4) contributed to the production of children's lived space – the space of their everyday experiences.

Chapter 5

EVERYDAY RHYTHMS AND PHYSICAL SPACE

"It's really difficult to do that when we've got a whole room of sleepers..."

(Focus group, LO, 23.4.15)

In this chapter, I specifically focus on how the size and configuration of the activity space in the four centres impacted on (i) the production of socially constructed group rhythms, and (ii) how children navigated space and time in response to their individual physical, social or emotional rhythms. The concept of rhythm speaks to the complex interaction and choreography of both teachers and children in response to constraints and affordances of space. As I explained in Chapter 3, Lefebvre (2004) conceptualised everyday life as being shaped by rhythms that arise in response to biological and social repetitions. Lefebvre's (2004) notion of rhythmanalysis brings space and time together through the analysis of biological and social timescales (Elden, 2004).

Within each ECE centre in my study, the situated rhythms of everyday life arose from the interplay of repeated socio-spatial practices, including human groupings, interaction, movement, rest, and activity (Edensor, 2010). Over time, their enactment became "choreographed" (Haldrup & Larsen, 2006, p. 278) creating a kind of 'place ballet' (Seamon, 1979). Forms of place ballet operated at the group level (in response to routines created by teachers), at the individual level (children's individual rhythms), and between groups and individuals. In this chapter, I begin by discussing how each centre's physical space influenced the choreography of group rhythms and how this interacted with children's bodily rhythms. I then discuss how each centre's physical space and people's movement patterns interacted with children's navigation of space and time in response to their individual physical, social or emotional rhythms.

Group rhythms

Rhythms arise from repetitive practices that are never repeated in exactly the same way (Lefebvre, 2004). In ECE centres, repetitive group events such as lunch, sleep, and rest periods are examples of socio-spatial practices that create group rhythms. These rhythms form part of children's everyday life and through them, everyday life becomes moulded around 'clock time' while also being "shot through with biological rhythms" (Lefebvre, 2004, p. 82). There is constant interaction between the two because, as Lefebvre (2004) notes "if you eat at midday and eight o'clock in the evening, you will end up being hungry at these times" (pp. 83-84). The ways teachers structure space and time (spatio-temporal structuring) regulates children's behaviour (Emilson & Johansson, 2009; Gallacher, 2005, 2016; James & James, 2008; Markström & Halldén, 2009; Rutanen, 2012, 2014) and fosters social order in ways that can create positive or negative experiences for children. For example, the taken-for-granted character of routines can provide children with a sense of security, belonging, and empowerment (Butterfield, 2002; Corsaro, 1992; Marshall, 2005), and the active and rhythmic nature of routines can create and recreate relationships among people, place, and time that Woodhead and Brooker (2008) describe as forming a kind of 'psycho-social glue'.

Lefebvre (2004) contends that socially constructed rhythms are imposed on us by timetables and other social mechanisms, and that the interplay of socially constructed (linear) rhythms and 'natural' (cyclical) rhythms produce either hybrid *polyrhythmia*, whereby rhythms influence each other harmoniously, or *arrhythmia*, whereby they are 'out of sync' and disrupt natural bodily rhythms (Lefebvre, 2004). In institutional contexts such as ECE centres, tensions can arise between individual and collective interests (Kennedy, 1991) through schedules that restrict or create obstacles to children's individuality. This occurs when schedules or routines impose socially constructed rhythms on children that conflict with their 'natural' bodily rhythms and thereby reflect a dominant discourse of 'being a member of a collective' (Markström & Halldén, 2009; Pacini-Ketchabaw & Kummen, 2016). In my study, teachers in the four ECE centres structured space and time so that socially constructed rhythms interacted harmoniously with children's cyclical (or biological) rhythms *as far as possible* (for

example, sleep); however, their opportunities for achieving this were enabled or constrained by the size and configuration of the physical space in each centre.

Teachers choreographing movement and rhythms in open-plan space

In all four centres, teachers created group-based lunch and sleep routines. As part of these routines, teachers needed to set up beds, clear some tables and classify space as sleep space, quiet space, eating space, and so on. In the two open-plan centres (LO and SO), unrestricted noise transfer and line-of-sight (visibility) between areas were particularly constraining of the harmonious interaction of diverse indoor rhythms and teachers at both of these centres responded by incorporating the outdoor space into the choreography of these group rhythms.

 In the months prior to my research, teachers at the larger open-plan centre (LO) had trialled ways to utilise the physical space to create slow-paced, small group routines. Participation in small groups is supportive of positive social interactions (Corsaro, 2003; Dalli & Pairman, 2013; Gandini, 1998a) and reflects a less collective approach whereby children can enact diverse rhythms. For these diverse rhythms to interact as harmoniously as possible, teachers structured space and time so that the 'non-sleepers' were restricted to the 'outside room' before lunch while those who

Figure 5.1: Distinction in lighting during 'non-sleepers' lunch at centre LO
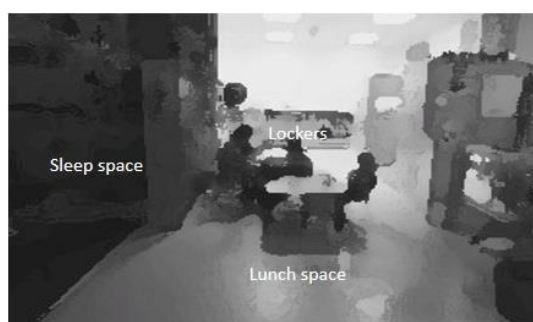
usually slept participated in lunch as part of small groups. The availability of the outdoor room at centre LO was crucial in enabling this. After the 'sleepers' had finished eating in small groups, teachers made subtle changes to the space by moving two tables away from the sleep area – towards the locker area – and by turning off all lights except those closest to the lockers. Figure 5.1 shows the view looking towards the lockers at

the end of the sleepers' lunch period and illustrates how teachers used the centre's slight complexity (T shape) to create a distinction in 'mood' between the sleep and lunch spaces (also see Figure 4.1).

The teachers at centre LO were able to use time and space to choreograph repetitive socio-spatial practices that enabled children some agency. For example, the slow-paced small group routines provided children opportunities to choose their seats, decide when to leave the table, and to enact their own rituals. Before lunch I observed two-year-old Ella watching the teacher set up beds before Ella walked over to her and:

> … leans her body on Tess [teacher] as she helps Debbie take off her shoes. [Ella walks back to her locker]… Ella gets her soft toy from her bag and goes to her bed and puts her soft toy on it. [Later as Ella eats] … she initiates her movement from the table [and] walks over to her friend David and takes his hand. They skip a little as they go towards the baby room together [to get their nappies changed before bed]. (Observation, LO, 20.4.15)

Ella's experience contrasted with the experiences of children in some international studies where, for example, children's seating was described as being highly controlled by adults (e.g., Gallacher, 2005; Markström & Halldén, 2009; Rutanen, 2012). The interplay of repetition and 'moments' of change enabled Ella to both prepare herself to engage in the rhythm choreographed by the teachers, and to be prepared by the rhythm to participate. Ella's everyday experiences of choosing to put her soft toy to bed and to transition from lunch to bed in her own time illustrated her use of moments when change could be created (Lefebvre, 2004) as well as her experience of 'continuity and control' (Butterfield 2002), a feature of child-friendly places (Chatterjee, 2005; Kennedy, 1991). Through her active role, Ella was able to contribute to the production of harmonious biological and social rhythms (hybrid polyrhythmia).

However, centre LO's lack of a designated sleep room meant that in order for Ella to participate in these slow-paced, small group routines and to experience undisturbed rest and sleep, teachers restricted the non-sleepers' mobility to the outdoors for the majority of the two-hour lunch/sleep period. Figure 5.2 illustrates the spatial separation between these two groups of children during the sleep period. An animated spatial map (Appendix J) depicts the way movements among groups were choreographed during the

lunch and sleep periods. Centre LO's outdoor room did afford the 'non-sleepers'

protection from the weather and the availability of this space enabled them to play

without restricting their noise levels while others slept; the non-sleepers could not

freely access the indoor space.

Figure 5.2: Spatial arrangement of 'sleepers' and 'non-sleepers' at centre LO
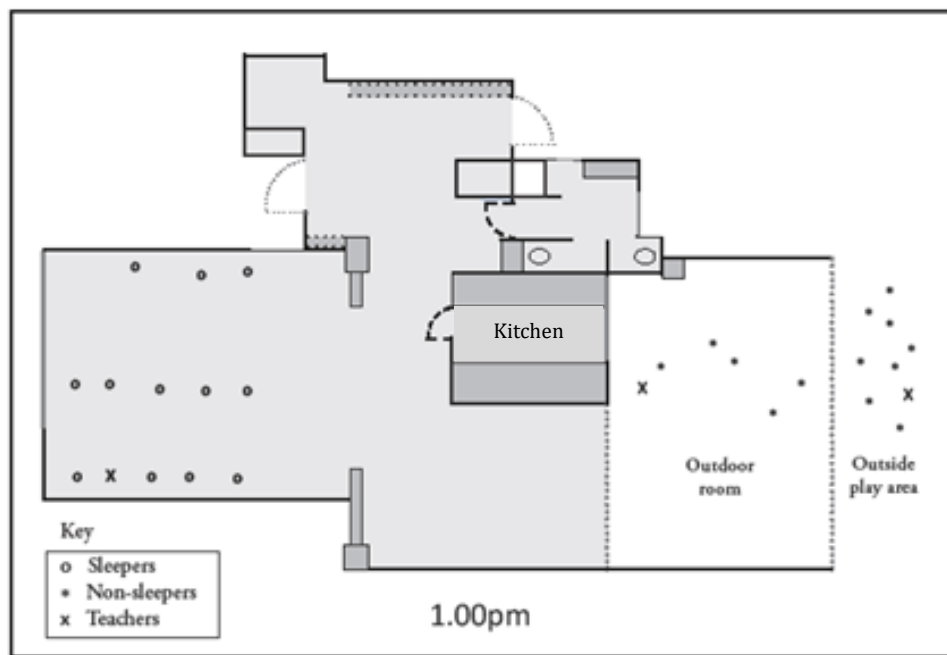
The non-sleepers transition to the outdoor room after lunch was calm and this calmness

was supported by the availability of a generously sized indoor area (as well as the

outdoor room) where they could wait while others had to finish eating. I noted:

> The older children are not able to go outside until a teacher is available
> to go with them. The teacher is still cleaning tables and floor. The
> children are encouraged to use the area in front of the kitchen or the
> outside room while waiting, to prevent noise from reaching the
> children who are sleeping about eight metres away. (Field notes, LO,
> 21.4.15)

This transition contrasted with that in the smaller open-plan centre (SO) where a lack of

space meant that most children moved outdoors immediately after lunch as I explain

later in this chapter. At centre LO, once the younger children were asleep, teachers

brought a group of about six older children back inside to participate in 'project work'

(see Appendix J: 2 pm). These children occupied a space that was as far from the sleep

area as possible. Here, a teacher encouraged the group to interact quietly for about 45 minutes. As the sleepers woke up they often stopped and observed these older children while walking to get their nappies changed (Observation, LO, 20.4.15; Focus group, LO, 23.4.15). Whilst this seemed a positive experience for the younger children, the enmeshed nature of these two group routines in the open-plan space were not without frustrations as Kayla (teacher) explained:

> I struggle because we have to be kind of conscious about sound, and it actually takes away a lot of learning when you can't get excited … it reduces the range of activities I can do… It's really difficult to do that when we've got a whole room of sleepers, and I also find they're (the other children) easily distracted, so when the sleepers get up and come past and have a look at what we're doing and hang around the table, it's hard, I get very frustrated. (Focus group, LO, 23.4.15)

Kayla's experience illustrates how, while teachers were able to structure routines to ensure that they mostly interacted harmoniously, the openness of the environment forced these two routines together at times and this led Kayla to constrain the older children's project work. While teachers appreciated that the outdoor room was "a luxury area that a lot of centres don't have" (Focus group, LO, 23.4.15) and that it played a crucial role in enabling them to structure space to ensure small group opportunities, most teachers at centre LO rated having a separate sleep room at the top of their 'wish list' for indoor space if money and space were no object (Focus group, LO, 23.4.15).

In contrast to the availability and use of the outdoor room at centre LO, centre SO's small open-plan Freesia room (3.5 to 5 year-olds) was used for rest, sleep *and* play (see Figure 5.3). Its small size and the the lack of any acoustically or visually separated space constrained teachers' opportunities for creating diverse small group routines that were responsive to children's need for sleep or rest.

So, in order to provide opportunities for sleep or rest for the 30 children, the teachers created a collective routine that comprised a short mat-time followed by a compulsory ten to fifteen-minute rest on the floor. During this period all children had a blanket each and were encouraged to be quiet and still. Noise transfer between different parts of the activity space in the Freesia room was the highest of all the centres and Table 5.1 shows that there was almost no difference between the

average background noise levels (dB) in the most central area of the room and noise levels in a less well-used peripheral area near the entry (70.4 dB and 70.3 dB respectively). As table 5.1 also shows, the (lack of) difference between the central and peripheral area at centre in the Freesia room was in stark contrast to the difference in the large complex centre (LC). At centre LC, the background sound pressure level of 60 dB (main area) was more than *sixteen times higher* than the 45.4 dB level measured in the Fern room (the peripheral area). Note that, 3 dB represents a change in power ratio by a factor of 2.

Table 5.1: Average background noise levels in central and peripheral areas

	Time	SO		LO	SC	LC
		Freesia	Tulip			
Main (central) space	9.30-11.30am	70.4 dB*	68.8 dB	63.4 dB	60.9 dB	60 dB
Quiet (peripheral) space	9.30-11.30am	70.3 dB	69.7 dB	62 dB	58.6 dB	45.4 dB

*3 dB represents a change in power ratio by a factor of 2. This means that background sound pressure level of 63 dB is double that of 60 dB.

Some children successfully structured space and time for themselves during the rest-time at centre SO, for example by occupying space in the dramatic play area to lie down (beside a wall and protected by furniture on two sides). Others had difficulty finding undisturbed space and this collective approach was hard to sustain for a long period with a large group of children. Figure 5.3 shows the children's approximate[18] location during rest time and the location of those who remained asleep after the compulsory rest period had ended.

As Figure 5.3 suggests, three or four children usually fell asleep and others played around them as they slept after the rest period had finished. During one of these periods I reflected:

> It's extremely noisy ... the video shows the extent of the noise surrounding children who have fallen asleep ... at least four children

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18 This is approximated because photos taken during this time did not show all children's faces – some were obscured by blankets.

have attempted to continue to rest in various places - including the outdoor area and on the mattress in the dramatic play area. They're clearly seeking quiet spaces to be but it seems that these do not exist inside. (Field notes, SO, 19.11.15)

Figure 5.3: Children resting and sleeping in the Freesia room at centre SO
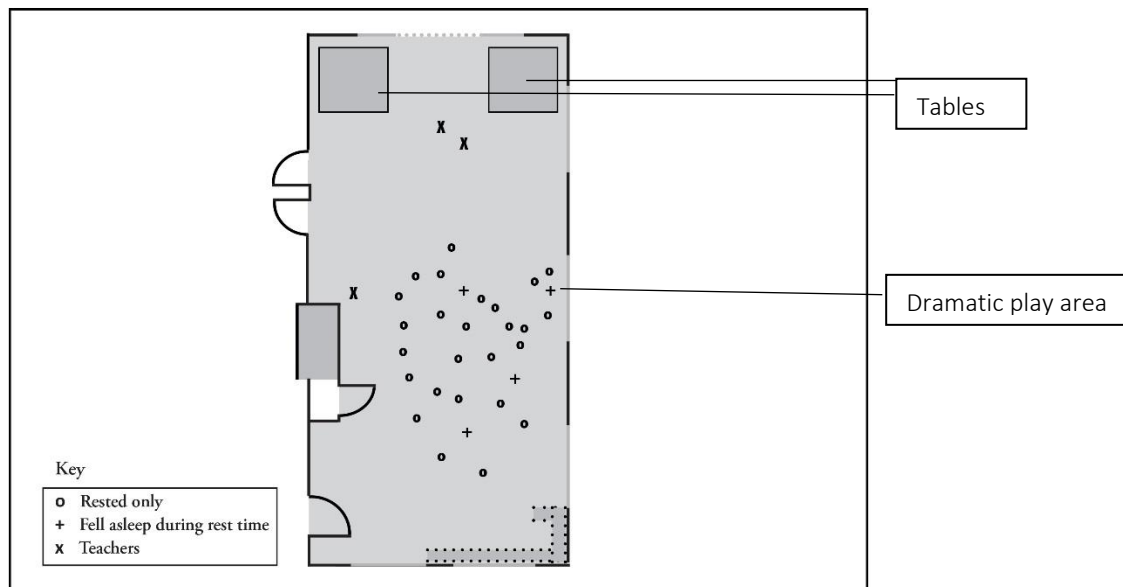
Even those who occupied the dramatic play area were not undisturbed:

> Three are asleep on the single mattress… one of the girls wakes up and uses her fingers to try to open the eyes of the girl lying next to her. The girl in the middle continues to sleep while the third girl wakes and also tries to wake the middle child – who remains asleep. (Observation, SO,19.11.15)

The collective nature of this routine meant that the interplay of socially constructed (linear) rhythms and some children's cyclical rhythms were 'out of sync' and produced an arrhythmia (Lefebvre, 2004). This arrhythmia was experienced by both children who remained awake, and those who slept, since the rest time was not of sufficient length for some children to fall asleep, for others to rest, or to provide opportunities for prolonged undisturbed sleep. This sleep/rest routine can be seen as an example of a schedule that reflected a dominant discourse of 'being a member of a collective' and that created obstacles to children's individuality (Markström & Halldén, 2009). The children's experiences at centre SO (Freesia room) reflected those reported in Nothard et al.'s

(2015) study where children in a similar context stated that they felt they lacked any choice or autonomy. At centre SO, one teacher explained that it was difficult to organise rests in any other way because "we only have the one space" (Focus group, LO, 23.4.15). In this way, the small size and lack of spatial complexity contributed to tensions between the interests of individuals and the collective and, in this case, the constraints of physical space made it difficult for the collective to allow for the individual (Kennedy, 1991).

Teachers' and children's experiences in centre SO's Tulip room (for the younger 2 to 3.5 year-olds) contrasted with some aspects of those in the Freesia room. In contrast to the Freesia room, the smaller Tulip room had an adjoining sleep room. This was not required by the NZ ECE regulations which only stipulate (for two-year-olds and over) space for 'sleep or rest':

> … for a reasonable period of time each day. [And if] …the space used for sleeping or resting is part of the activity space, there [must be] alternative activity spaces for other children not sleeping or resting as necessary. (Ministry of Education, 2017b, PF 33)

While the size and configuration of the available space in the older children's Freesia room clearly constrained teachers from complying with this regulation, the Tulip room's adjoining sleep room enabled some children to experience undisturbed sleep while other children played. However, its close proximity to the activity space caused teachers concern about noise transfer and this led teachers to constrain the activity of non-sleepers, including their noise levels. Consequently, children's access to the Tulip room was constrained and they were encouraged to play outside at the start of sleep times. In addition, occasional 'overflow' (when children wanting to sleep could not fit in the sleep room) meant that children sometimes also slept in the activity space, further constraining its use by others. In this situation, 'non-sleepers' were restricted to the outdoors or to the older children's room. Teachers explained the predicament they faced, even if all sleepers 'fitted' in the sleep room:

> Rata: We try to keep [non-sleepers] on the verandah.
>
> Helen: We pretty much keep them out here, yeah … at least until those ones are asleep.

> Caz: Even in really bad weather we would definitely be taking them outside.
>
> Rata: It's really hard sometimes because it gets so crowded in there, in the sleep room. (Focus group, SO, 14.12.15)

These teachers explained to me that they had tried various ways of organising routines to create smooth transitions between lunch and sleep but found that, because it was hard to create separate groups inside, routines easily became overly structured with "too many group times" (Focus group, SO, 14.12.15). Instead, a single collective group time preceded a lunch routine during which the teachers dimmed lights, placed candles on tables, and encouraged children to contribute by getting their own plates, drinks, choosing their own seats, and helping to serve lunch. On some days these routines produced a slow pace whereby, as with children at centre LO, children were able to participate in very relaxed routines. For example, I observed:

> Kahu takes a plate and puts it on a table. He sits himself down and says 'here Tama' as Tama arrives nearby [and later] …Kahu is still eating and seems to be having quite relaxed chats with the other children at the table. He's watching what other people are doing and waves to a teacher as she comes in. (Observation. SO. 25.11.15)

However, children's different rhythms sometimes became entangled in the very small open-plan activity space, particularly during the transition between lunch and bed. I noted:

> Some of the children (two-year-olds) that have gone outside were supposed to be going to bed. A teacher goes outside to get them back. She's the teacher who was going to clean up the tables after lunch. There's still a lot of food on the floor and tables [covering about a third of the floor space, including the area in front of the doors to the outside] and I elect to help with this clean-up. (Observation, SO,17.11.15)

As with centre LO, this transition period involved two main groups of children (sleeper and non-sleepers) and this required teachers to enact highly choreographed routines. However, unlike centre LO, there was no space for the children to congregate in the Tulip room before going outside that didn't interfere with those getting ready for bed, or teachers' involvement in cleaning up after lunch. The Tulip

room's small size required teachers to structure space and time more 'tightly' than the teachers at centre LO, and this constrained the opportunities teachers had to respond to unexpected changes or poor weather, or the opportunities that children had to enact their own rituals. Several teachers described particular challenges when space outdoors was unavailable and one day I watched as they encouraged children outside after lunch, I reflected:

> It's quite cold outside, but again this seems to be a routine that they are used to and they're getting coats on. It's not raining but it's spitting. This move to the outdoors is very much driven by the need to clean up and lack of alternative space for children to be while the floor is swept. The routine is being driven by the lack of space. (Field notes, SO, 18.11.15)

However, the dedicated sleep room did afford some opportunity for diverse rhythms to coexist in this open-plan space. In contrast to the children in the Freesia room, children in the Tulip room could sleep for extended periods. For example, two-year-old Paul was able to remain asleep without disturbance until 4.30pm, a rhythm that teachers told me his parents were happy for him to follow (Field notes, SO, 18.11.15).

Teachers choreographing movement and rhythms in complex space

In the two complex centres (LC and SC), full-height walls restricted noise transfer and visibility between areas, particularly in the larger centre (LC). In contrast to the two open-plan centres, centre LC's combination of spatial complexity and large size combined to enable diverse activities to coexist more easily. For example, in relation to the lunch and sleep/rest time routines, centre LC was unusual in this study because tables or other furniture did not need to be cleared to create space as they did in the other three centres – particularly in the smaller two centres (SO and SC). Centre LC's large size afforded space for three 'dedicated food tables' to be permanently available in a small dining area with additional floor space nearby. This, together with the use of lunchboxes rather than a cooked lunch, enabled children to easily 'picnic' together. However, unlike centre LO, teachers did not aim to create small group opportunities at lunchtime. Instead, these teachers valued spending lunch time together "like a family" (Focus group (LC, 21.7.15) although, this may also have reflected the lack of

choreography required to ease the transition between children's lunch and sleep routines.

Teachers at centre LC engaged in very little 'choreography' of sleep routines or of the transition between lunch and sleep because centre LC's large size and spatial complexity (see Figure 4.2) enabled one peripheral room (Flax) to be used for sleeping while other spaces remained available to those awake. The Flax room was mainly unaffected by noise from other parts of the centre and its use by children sleeping appeared to have little impact on the use of space, or on congestion, elsewhere (Spatial mapping, LC, 16.6.15). An animated spatial map (Appendix K) shows that children who were not sleeping experienced few restrictions on their mobility during the sleep period.

The ability for diverse indoor activities to coexist harmoniously at centre LC, in contrast to centre SO's Freesia room, enabled sleep routines to be more flexible. For example, just before two-year-old Max's usual sleep-time, he joined a group of older children who were preparing to watch a short film they had made. Technical difficulties delayed its screening but he was able to stay and watch before he went to bed. This was possible, in part, because his late sleep had almost no impact on the rhythms or activity of others later in the afternoon so teachers did not need to balance competing interests. This illustrates how flexible routines can provide more opportunities for children to exercise agency in relation to their participation in everyday routines.

Finally, despite the much smaller centre SC being in a complex space with two peripheral rooms (see Figure 4.3), teachers at centre SC choreographed the lunch and sleep routines carefully to avoid stressors later in the afternoon when diverse rhythms clashed. Although complexity reduced noise transfer when compared to the open-plan centres, centre SC's small size meant that noise transfer between rooms was higher than those experienced at the other complex centre – centre LC. Table 5.2 shows that the *difference* in sound pressure levels between centre SC's main and peripheral space was 2.3 dB (60.9 – 58.6 dB) compared to a difference of 14.6 dB (60 – 45.4 dB) at centre LC. This means that the background noise levels in centre SC's main area were around *two-thirds higher* than those in the Kauri room (the peripheral room measured),

compared to the main area being *sixteen times higher* than the peripheral room measured at centre LC.

Table 5.2: Diverse average background noise levels - centres SC and LC

	Time	Centre SC	Centre LC
Main central space	9.30-11.30am	60.9 dB	60 dB
Peripheral observed quiet space	9.30-11.30am	58.6 dB	45.4 dB

*3 dB represents a change in power ratio by a factor of 2. This means that background sound pressure level of 63 dB is double that of 60 dB.

Partly in response to this higher level of noise transfer, teachers structured space so that all children slept or rested at the same time. However, they were able to use the two peripheral rooms to create opportunities for some different rhythms to coexist. For example, teachers ensured that children who were likely to sleep occupied one peripheral room, and those 'resting' occupied the other. Teachers assigned children to these different spaces according to parents' wishes, teachers' assessment about children's need for sleep, and sometimes according to children's wishes. While centre SC's complexity did enable teachers to initially structure space and time to align with children's different rhythms in this way, as some children fell asleep those resting seemed ready to resume play. Once 'resters' had resumed playing, the teachers suppressed these children's noise and activity levels to prevent others from waking, as had teachers at centres SO and LO.

However, as more children woke and resumed play at centre SC, the small indoor space became increasingly congested. In the afternoon, congestion indoors usually peaked at 1.30-2pm when only a few children remained asleep. Congestion was exacerbated when, despite teachers assigning groups to different rooms, children fell asleep in *both* peripheral rooms (thus making them unavailable to others), or when rain prevented children from going outside. On days when only one or two children remained asleep in

one peripheral room, congestion usually occurred elsewhere in the activity space, particularly on wet days. At 2 pm on a wet day I noted:

> It's suddenly starting to feel very busy and noisy in both [available] rooms and Casey [teacher] organises a re-set[19] with the children. It's 25 minutes since the last re-set... Casey takes a group of children into the Kauri room and they discuss what they want to do this afternoon and make a list. The children select to join one of three groups that teachers 'spread' around the available space. (Field notes, SC, 19.8.15)

When congestion increased, teachers took a strong role in structuring space to ensure that children were dispersed around the available space to maintain a relatively quiet and calm atmosphere. This was similar to practices reported by Rutanen (2012), whereby teachers responded to crowding by organising small groups of children so that each group was physically separated by walls or distance. Although the teachers encouraged children to contribute to decisions about the activities available to them during these more structured periods, children were unable to engage in free play as occurred at other times of the day when congestion was less evident (see Chapter 6). Teachers at centre SC expressed frustration about the length of time during which space was constrained while children slept, and the lack of flexibility it allowed them to respond to children's individual rhythms. As they explained to me, they'd like to "...have a sleep room that's just a sleep space... and then children can go in there at different times to go to sleep instead of having to all go in nearly at the same time" (FG, SC, 2.9.15).

These examples have illustrated how centre SC's complexity enabled teachers to create routines (linear rhythms) that, during the initial 'rest time' period, closely reflected many children's individual cyclical rhythms. However, centre SC's small size constrained some children's opportunities to play without restrictions after the initial rest period, and from this point in the afternoon diverse rhythms were more dominated by collective interests until all children awoke. This illustrates how SC's small size narrowed the affordances of complexity.

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19 Re-set means tidying an area so that materials are well-presented and accessible, and there are surfaces for children to work at or on. Teachers may also set up a provocation, such as an interesting arrangement of blocks, to invite children's interest.

Teachers in all four centres in this study aimed to create linear (socially constructed) rhythms that, as far as possible, were in unison with children's cyclical (bodily) rhythms. Teachers did their best to create "...space for sleeping or resting" (Ministry of Education, 2017b, PF 33), and tried to 'make it work' by choreographing a 'place ballet' (Seamon, 1979) in which conflicting rhythms did not intersect. However, the size and configuration of the physical space enabled or constrained the options teachers had for achieving this in each of the four centres. In the two open-plan centres, the physical space forced diverse rhythms to converge indoors. Children at the smaller centre (SO), particularly in the Freesia room, experienced collective routines that were 'out of sync' with some children's cyclical rhythms and consequently produced arrhythmia (Lefebvre, 2004) and constrained children's individuality (Kennedy, 1991; Markström & Halldén, 2009).

At centre LO, teachers overcame this to some extent by incorporating the outdoor room into a place-ballet that also utilised the indoor space's T shape and large size. While this choreography successfully separated diverse rhythms and enabled some children to participate in small groups while others experienced undisturbed sleep, it also restricted some children's mobility and constrained their indoor activity. A similar pattern of restricted mobility and constrained indoor activity occurred at centre SC where, although spatially complex, the centre's small size at times forced diverse rhythms together. In contrast, LC's large complex space enabled diverse rhythms to coexist harmoniously. This allowed teachers flexibility in relation to how they structured space and time and enabled children to follow their individual rhythms by, for example, sleeping when they chose.

Edward Soja (2009) has described space as "... an active force shaping human life" (p. 2). It plays a role in social life, not as a determinant, but as a context for social life. In relation to the lunch, sleep, and rest routines in each centre, physical space created *conditions* that enabled or constrained the opportunities that both teachers and children had to exercise agency in their use of space and in their creation of, and participation in, routines.

Children's navigation of space and time

In the second half of this chapter, I demonstrate how children found opportunities to create space for themselves in response to daily rhythms, and how children used the affordances of physical space to exercise agency in response to their individual physical, social, and emotional rhythms, sometimes in surprising ways. As I explained in Chapter 3, affordances are *opportunities* offered by the physical or material environment to an organism and, in the case of people, the process of discovering and actualising affordances can involve exploration (Chawla & Heft, 2002; Gibson, 1979) and be tied to cultural and social contexts (D. Howes, 2005; Kytta, 2002). I begin by demonstrating how children found opportunities to create space for themselves in response to daily rhythms.

### Children inserting their own routines into daily rhythms

Within the situated rhythms of the centres in my study, children found opportunities to create indoor space for themselves in response to rhythms that they had come to understand and predict (Gallacher, 2005). This practice was particularly evident at centre SC where, despite the constraints of small centre size, or perhaps because of them, children created space for themselves by inserting their own routines into or around group rhythms. This is similar to the idea that peer groups create routines that sometimes resist the official (adult sanctioned) routines (Corsaro, 1997; Gallacher, 2005). In my study, while the children's routines sometimes usurped 'official' routines, at other times they appeared to be less about resistance and more about children finding ways to navigate space and time to achieve their own goals.

In the first example, children at the small complex centre (SC) appeared to be accustomed to the idea that *all space* was polymorphic (Jones, 2000), or appropriated for different purposes at some point during the day. This is illustrated by three-year-old Eli and Duncan's approach to block play. After observing these boys build 'marble races' in the main room over four successive days I was surprised to realise that they only attempted this in the early morning (before 9 am) and after 4 pm. They typically built the 'races' by lining up several long pieces of grooved wood across the floor, raising the first one off the floor to make a ramp – a task that required focus and balance. I noted

that Eli "...dismantles the ramp and then fixes it and rolls the marble down repeatedly, fixing the ramp if needed" (Observation, SC, 19.8.15). Over several mornings I observed that, after the children set up the marble race and successfully used it for about half an hour, the centre became increasingly congested as children and families arrived for the day. By 9 am the marble race was being regularly knocked over by other children's activity. Shortly after 9 am, breakfast became available and some children's movement to the table used for breakfast at this time helped reduce congestion and prolonged Eli and Duncan's play with the marble race. I reflected:

> The kai [food] table really does seem to have the effect of settling things down. There are six children eating and many of them are the younger children. This has created a lot more space in the rest of the room." (Observation, SC, 24.8.15)

Figure 5.4 The marble race during morning tea at centre SC

Eight children at the food table

Eli and Duncan with their marble race.
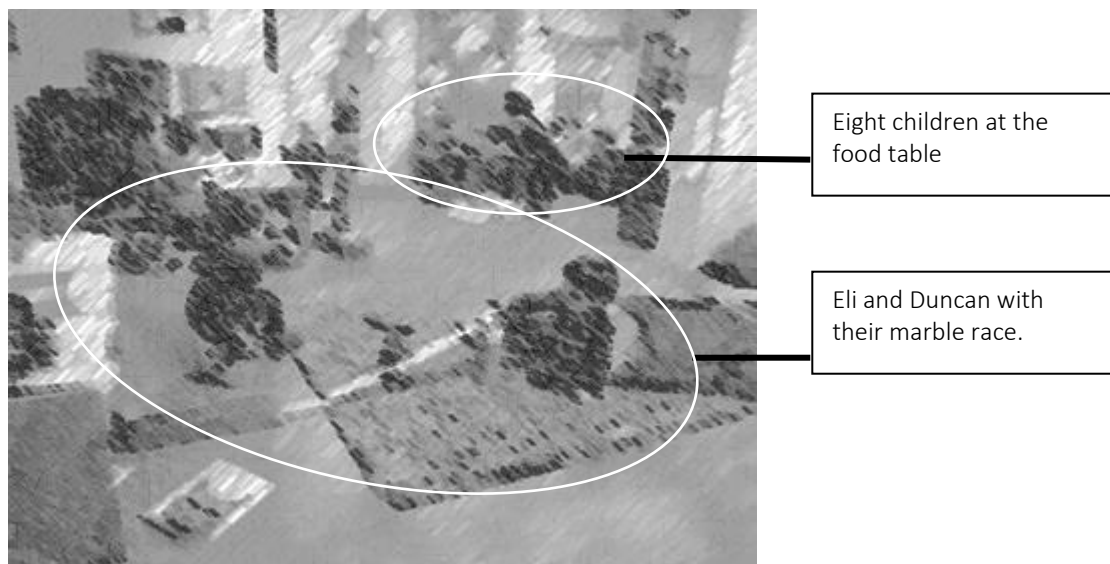
After children finished breakfast the marble race was broken as the floor area once again became congested. One morning I reflected that "Eli seemed to accept its breakage and moved into the Rimu to read a book" (Field notes, SC, 24.8.15). The boys re-set the marble race at four o'clock in the afternoon and I wondered if Eli may have accepted the earlier breakage "...because he was aware of the centre rhythms and the improbability of it staying up" (Field notes, SC, 24.8.15). When asked, the children seemed unconscious of the timing of their actions, although the teachers had also noticed this pattern of play over successive days (Field notes, SC, 24.8.15). Teachers and children appeared to navigate space by learning the unspoken rules of behaviour that govern places (Ergler &

Wood, 2013). In this case, the unspoken rules related to the centre's rhythms - children learnt that people tend to respect block work *if it's set up at particular times.* At centre SC, the children's spatial practices suggested that polymorphic space (and a tolerance of some disorder) played a role in achieving a balance between stability and flexibility (Woolley, 2015) that enabled children to transform space (Chatterjee, 2005; Kennedy, 1991), *especially where there was a lack of empty or unassigned physical space available.* However, although these children successfully created space for themselves, their opportunities were constrained by the centre's small size. They learnt that expansive block play could only occur within a narrow time frame due to an overall lack of physical space.

A second illustration of children working space and time to meet their own interests occurred during group routines at centre LC where, although two-year-old children seldom collaborated with same-age peers during free play (see Chapter 6), a small group of them regularly resisted the unspoken 'rules of the game' during mat-time events and instead utilised complex space to create a routine of their own. Most children navigated space according to the rules or codes of the mat-time routine by staying together for singing, dancing, and stories. Although younger children joined the group initially (demonstrating that they knew the rules), on several occasions two or three children moved away from the main group to play in a semi-separate space. Here, they painted, played with blocks, interacted together, and occasionally observed the larger group from around the corner (Observation, LC, 16.6.15).

These children recognised an opportunity and, as has been noted in previous research (Skånfors et al., 2009), their withdrawal at busier times suggests that they also exercised agency by making their own response to the ebbs and flows of daily rhythms. In physically leaving the 'official' group event these children can be seen as entering into a negotiation with their teachers (Hackett et al., 2015). In this case, teachers responded by allowing the younger children to move away, possibly because the children's activity (behind a full-height wall) was out of the direct sight of the main group and therefore did not threaten the collective routine. By enabling different rhythms to operate without negatively impacting on each other, the building's complexity afforded these young children an opportunity to insert their own social routine 'around' a busy group routine,

or to choreograph their own parts in the centre's place ballet in ways that escaped the "established order" (Lefebvre, 1991, p. 383). The routine and the affordance of the 'hidden space' combined to create a gap from which children could resist the rules (Seymour, 2015) and open the way for fresh actions to occur (Lefebvre, 1991). The acceptance by others of the children's insertion of their own routine illustrates how the 'official' routines and the 'underlife' routines created by children, play out as "forms of social learning through which space and time [is] continually modified and (re)negotiated" (Gallacher, 2005, p. 259).

A final illustration of children navigating space and time around established rhythms occurred in the large open-plan centre (LO) and illustrates how two-year-old Ella created space and time for herself by weaving her own 'end of day' routine around the centre's daily rhythms. Ella and her friend Esme (also a two-year-old) often asked to visit the infant room towards the end of the day, a place they had transitioned from some months earlier. In this large centre, the nearby locker area was usually unoccupied and devoid of much equipment. To this extent, the locker area represented 'potential space' (Kritchevsky & Prescott, 1969). The following observation took place on a sunny day and began at 3.10pm:

> Ella makes two journeys with a buggy to transport a toaster, jug, and other items from the play kitchen (in the carpet area) to the locker area [at the other end of the large T-shaped activity space] (See Figure 4.1). She spreads out the equipment on the floor saying "I'm going to have breakfast here"... She walks to the top of the T shape [from where she can see the entire space], calling out to her friend "Adam". She finds Adam outside and says "come with me our Adam". They collect more items from the carpet area and journey together back to the locker area and arrange the materials (see Figure 5.5).
>
> ... Ella watches a parent collect their child from the nearby infant room, and says "baby Louis has picked up his mum", then looks at Adam and says "I've got some toast, do you want some toast?" Adam accepts the 'toast' and they watch people arrive and leave together. Ella sees Billy's mum arrive to collect Billy and says "mummys daddys picking me up".
>
> Esme [near the top of the T shape] looks towards Ella and Adam and walks over to join them. After a short dispute over the equipment, Ella asks Esme "do you want to come out for dinner?" Esme, Adam, and Ella play 'dinners' for a few more minutes, before knocking on the infant room's glass door. A teacher lets all three children in for a visit. (Observation, LO, 20.4.15)

This interplay between the daily rhythm of parents arriving, the locker area being quiet at this time of day and providing the children visibility to other areas, and Ella's regular practice of entering the infant room at the end of the day enabled Ella to create a "space of care" (Pairman & Dalli, 2017, p. 124) for herself. She used space and time to respond to her own rhythms of 'winding down' at the end of the day and preparing for her parent's arrival. Visibility was an important aspect of Ella and her friends' spatial practices and Chapter 6 develops the idea that, because open-plan space affords unrestricted visibility, it provides particular opportunities for younger children to experience agency in their everyday lives.

Children using spatial affordances to respond to their individual rhythms

In this final section, I demonstrate how physical space influenced children's opportunities to exercise agency in response to their individual physical, social, and emotional rhythms by appropriating particular spaces. I use two scenarios from centres LC and LO to demonstrate how children used affordances available in a complex and a large space to respond to their changing desires for social interaction, movement, and noise in particular. This section builds the argument that large size and spatial complexity acted together to enable a more harmonious coexistence of diverse rhythms, and that this enabled children to exercise agency in their daily lives. In this chapter's final section, children's agency is evident in their opportunities to seek both company and solitude, and their opportunities to choose to participate in exuberant or quiet activity. Analysis of the children's experiences in the smaller centres, SC and SO, is discussed in comparison to each scenario.

The first illustration is about a child responding to his emotional and social rhythms in the large complex centre (LC). The following scenario began in the early afternoon on a partly rainy day. Leo (four-year-old boy) had played with his friend Jimmy (also a four-year-old) throughout most of the morning. Before lunch, they created a 'hide and seek' game involving an object that they hid in different rooms. During a dispute about turn-taking, Leo became upset and seemed to manage his emotional response by physically withdrawing from all social interaction. He moved into a secluded space by the lockers (see Figure 4.2) for a short period where I noted that his 'eyes welled' before he returned to his friends. After lunch, Leo became increasingly active and moved outside where, once again, he entered a dispute about the rules of the game. This time, Leo returned indoors and moved directly into the Fern room (see Figure 4.2) (Field notes, LC, 22.6.15). Figure 5.6 illustrates my observation that "Leo is completely alone and spinning his body around and around while holding a doll in front of him. He's looking in the mirror while repeating "the baby's trying to attack me" (Observation and video transcription LC, 22.6.15).

Figure 5.6: Leo spins his body while holding a doll (video still)

Leo told me that he had come into the room because he had cold hands but his choice of an unoccupied space, among other warm rooms available, also suggested to me that he wanted to be alone (Field notes, LC, 22.6.15). Teachers did not enter the room during

this time but noted his presence as they walked past. I continued to observe from outside the room:

> A few minutes later a girl stands in the entrance. Leo looks at her briefly and then turns away. She leaves again ... After 15 minutes Leo's friend Hugo arrives but does not enter. Leo smiles and says "you've got the same shirt as me, I've got a shirt like that at home". Hugo enters the room and they begin talking to imaginary creatures in the mirror together. While looking in the mirror, Leo says "look he's doing the same as me... I need the army of Sharman because I'm Sharman". [Sharman appeared to be an imaginary character]. Hugo appeared to call the 'army' through the mirror by beckoning with his hands while saying "come on, we need you". The boys continued this imaginary game for a further half an hour before five other children arrived from outside. (Observation, LC, 22.6.15)

Centre LC's Fern room afforded Leo the opportunity to appropriate a private space in response to his desire to withdraw from the social group and possibly to respond to his emotions. By moving to the Fern room Leo was able to create space and time for himself, possibly to regulate his emotions through play (Emilson & Johansson, 2009) as he developed skills in self-regulation (Willis, 2016). Leo's experience was similar to those of children I observed at the smaller complex centre (SC) who also frequently occupied enclosed rooms in response to their social and emotional rhythms. For example, I recorded the following notes about two-year-old Harry at centre SC. Harry,

> ...comes inside and briefly goes into the main area. He picks up a long piece of wood from the marble track and throws it against the wall. The teacher tells him that it 'isn't okay' and Harry looks as though he might cry, but doesn't. He walks out to the locker area and asks if he can have a soft toy. The teacher helps him get down some soft toys from a basket and he takes three of them into the Rimu room, lines them up and puts little blankets over them. Then he gets a book and 'reads' to the soft toys. He is by himself. (Observation, SC, 24.8.15)

Because there is a complex dynamic in children's social relationships, "... between wanting to join on the one hand and wanting to withdraw on the other, [and there are] no clear-cut lines between inclusion, exclusion and withdrawal, but rather subtle ones" (Skånfors et al., 2009, p. 107), it is perhaps not surprising that the children at centres SC and LC seldom directly excluded others from these peripheral rooms. Although Leo ignored the girl who stood in the doorway, she appeared to make her own decision not

to enter, possibly realising that Leo wanted time alone. Children seemed particularly aware, and respectful of, each other's need for privacy in the peripheral enclosed rooms at both of the complex centres. On several occasions at centre SC, I observed children entering the long narrow Kauri room when it was already occupied by one child and choosing to move to the other end of the room (away from the child already present) particularly when the room was softly lit (e.g., Video, SC, 19.8.15).

The experiences of children at LC and SC contrasted with those of the children in the small open-plan centre (SO), particularly with those of the older children in the Freesia room. The room's lack of architectural complexity meant that privacy was only partially afforded by the arrangement of furniture and, as already explained, noise transferred across the entire space (see Table 5.1). When asked where they went if they wanted to be alone or in a quiet space with one other friend, children at SO who responded to these questions identified outdoor spaces or under a table inside (C.G. story & field notes 17.11.15, 19.11.15). Amy (four-year-old girl) explained "because all the spaces have children in it" with her friend Wai adding "[we] don't have any quiet spaces" (Field notes, SO, 19.11.15). One day, I observed Liam saying to a teacher "I need somewhere quiet to go by myself" before crouching against a wall beside a 'play oven' (Observation, SO, 17.11.15). Video data showed that the room remained noisy and the space did not afford Liam privacy as children continuously passed in front of him during his attempt to withdraw (Video transcription, SO, 17.11.15). On another occasion, I observed a child under a large table with chairs arranged in front of her. I bent down and, after a little conversation, asked "... are other people allowed in here – what are the chairs for?" Child: 'Only one". Me: "Only one?" Child: "The chairs are for locking her in" (Field notes, SC, 27.11.15).

This confirmed my impression that some children at centre SO found it difficult to experience agency in relation to their level of social interaction, particularly their desire to withdraw, even when they appeared to be consciously aware of their needs. They also seemed to find it difficult to locate spaces for rest. For example, at about 4 pm one day four-year-old Abby looked tearful and told me she was feeling a bit tired:

Me: "Is there anywhere you could go here that's quiet where you could have a rest?

Abby: "I don't know, I want to lie down and close my eyes on something nice and comfy."

Me: "Is that comfy - that couch over there?" [I indicated towards the child-sized couch]. Abby: "It's not really got space for sitting. My couch at home has. It can fit mummy and daddy and my cat and me … and when we're all sitting on it, even my cat, there's still more space". (Observation, SO, 17.11.15)

Older children at centre SO sometimes moved to the younger children's (Tulip) room to engage in quieter experiences such as reading and playing with the younger children, especially later in the day. The smaller number of children and the relative darkness of this room seemed to play a role in creating a quieter, more intimate and restful space at times. However, opportunities for silence still appeared to be rare. Helen (teacher) explained that when the Tulip room had been completely quiet one day, she observed two children responding by whispering to each other. Helen was intrigued by this and told me that it indicated to her how rare the experience of silence was for the children at the centre (Field notes, SO, 25.11.15). This was confirmed by my data on noise levels. Table 5.3 shows that background noise levels in centre SO's quietest areas (70.3 and 69.7 dB) were at least 8 times higher (9 dB) than those in centre LC (45.4 dB) and centre SC (58.6 dB).

Table 5.3: Average background noise levels in peripheral /observed quiet areas

	Time	SO		LO	SC	LC
		Freesia	Tulip			
Peripheral (observed quiet space)	9.30-11.30am	70.3 dB	69.7 dB	62 dB	58.6 dB	45.4 dB

*3 dB represents a change in power ratio by a factor of 2. This means that background sound pressure level of 63 dB is double that of 60 dB.

In contrast to the smaller centre (SO), the larger open-plan centre had a substantial amount of potential space (Kritchevsky & Prescott, 1969) available to children. This potential space seemed to contribute to children being able to experience more opportunities to withdraw despite its relatively open-plan design and confirmed

previous findings that circulation space between groups and individuals minimised distraction and noise (Dovey & Fisher, 2014; Moore, 1986). For example, four-year-olds Simon and Tyler chose to withdraw in the afternoon:

> 2.45 pm: Tyler is lying on the couch and Simon is lying on a cushion on the floor by the couch. Simon waves his legs in the air as he rests and then goes and gets a blanket and puts it over himself. It's quiet in the carpet area with only 3 other children in the vicinity. Tyler and Simon speak a few words to each other but Simon mainly stares into space and Tyler looks at a book. They stay here for half an hour (until afternoon tea time at 3.15 pm. (Observation, LO, 13.4.15)

Tyler and Simon withdrew socially by acting distant (Skånfors et al., 2009). Later in the day, in marked contrast to Abby who was unable to find a quiet space at centre SO, Simon responded to his physical desire for further rest by appropriating a large couch.

> 4.30 pm: … [Simon] rubs his eyes then he lies down on the couch and looks at two children and a teacher who are doing a puzzle on the floor. After a minute he rolls onto his back and puts one arm above his head – resting on the arm of the couch. Simon moves his body around, sometimes putting his legs up, sometimes rolling onto his side. Two children are very close to the couch or touching the couch but he appears to pay them little attention. It's very quiet. (Video transcription, LO, 21.4.15)

In these examples, large size and spatial complexity both afforded opportunities for children to seek company, solitude, or rest to in response to their individual rhythms.

Exuberant and calm play coexisting in large complex space

Unusually within the four centres, at centre LC boisterous and quiet play could occur simultaneously indoors as illustrated in this final excerpt. This excerpt again involves Leo and Hugo in the Fern room at centre LC. After spending time alone in this room, Leo had been joined by Hugo and they spent half an hour playing a game about the 'Army of Sharman'. A group of five children, who had recently moved in from the outdoors, entered the Fern room and I noted:

> Leo and Hugo seem positive about the other children's entry and together they transform the Fern room into a site of boisterous, loud group play. The game 'Army of Sharman' evolves into one where all seven children have superpowers. They organize themselves into goodies and baddies and begin jumping around the room and climbing on the furniture and window sills. (Observation, LC, 22.6.15)

My field notes from a similar event at LC had noted that "Although they're shouting and being fairly loud it's not particularly audible from other rooms – apart from the hallway. I was not aware of this play until I actually came into the hallway area" (Field notes, LC, 18.6.15). I continued to observe the group of children in the Fern room:

> After a few minutes, all seven children leave the room together... They move through the hallway and into the adjoining rooms, congregating where a teacher is reading a story to the children [in the main area]. They jump around on the three couches in this area and continue to act out their play. Some throw themselves around on the carpet and make "phew phew' noises. The teacher says "we're trying to read here perhaps you could take your superpowers outside". Jessie (four-year-old girl) says "no we're not going to play outside because we're playing inside" [they have recently returned from playing outside in the cold]. The teacher replies "no, it's making it hard for us to read". One of the boys says "we're going outside" but Jessie replies "no, no we [are] going in that room" [as she points in the direction of the Fern Room] and the group of seven run back to the Fern room and continue their boisterous play. (Observation, LC, 22.6.15)

As their play no longer disturbed the story the teacher appeared to accept their decision to stay inside. I regularly observed children at complex centres LC and SC using the peripheral rooms to turn out lights and create quiet, intimate games as well exuberant games without disturbing, or being disturbed, by others elsewhere in the centre (see Chapter 6).

Children at the large open-plan centre (LO) were also observed playing exuberantly inside on occasion. For example, as two children threw teddies and balls in the air I noted that "… they're able to really dominate one area that's right up the back without some of their more boisterous play disturbing others" (Field notes, LO, 13.4.15). However, there were few other children inside at the time and I noted that teachers usually restricted boisterous play to the outdoors (including to the outdoor room). Teachers at the small open-plan centre (SO) took a similar approach to conceptualising the entire indoor space as 'quiet space'. I discuss this further in Chapter 7.

The advantage of boisterous and quiet play coexisting harmoniously *indoors* at the larger centre LC was particularly evident on rainy days when the difference in weather was barely noticeable inside. In contrast, teachers at the other three centres were observed, or reported, needing to constrain children's indoor activity to prevent disruptions among different children's interests. For example, on wet days at centre SC, the children's practice of transforming the Kauri room by turning off lights and dancing, or jumping on and around the big old chair in the room (e.g., Video, SC, 24.8.15) was restricted because the indoor spaces became congested. Video data and teachers' comments suggest that this was because noise from this kind of activity was only sometimes contained within the room (e.g., Field notes, SC, 18.815, 19.8.15; Video, SC, 24.8.15). As further explained in Chapter 7, while centre SC's complexity reduced teachers' visibility and noise transfer, its small size moderated this effect leading teachers to sometimes regulate children's indoor spatial practices in the interests of the wider collective.

Implications for children's lived experiences

At the start of this chapter, I said that my analysis and discussion was underpinned by consideration of how children's "agency, actions or perspectives" (Hackett et al., 2015, p. 4) contributed to the production of children's lived space – the space of their everyday experiences. As I explained in Chapter 1, children's agency arises from the complex relationship between the adult, children, and materials (Alderson, 2001; James, 2000) and can be 'thickened or thinned' by the layering or eroding effects of these relationships (Klocker, 2007).

 In this chapter, I have demonstrated some of the ways that the size and configuration (material aspects) of each centre interacted with the social world to thicken or thin children's agency. For example, child-friendly characteristics of physical environments (Chatterjee, 2005; Kennedy, 1991) afford children opportunities to express themselves freely and to create and control territories; to find emotional shelter; to experience freedom of movement; to exercise choice and personal initiative; to find places for personal wellbeing, attachment and seclusion; and to experience opportunities to engage and interact with space (see chapter 2). These characteristics reflect rich lived

experiences, or a good everyday life. In this chapter, eight rich lived experiences that aligned with these characteristics emerged and are summarised in Table 5.4. My findings suggest that children's opportunities to enact these experiences were influenced by the interplay of physical space, group rhythms choreographed by teachers and by children's navigation of space and time in response to their individual rhythms. The extent to which each centre's physical space enabled or constrained the harmonious coexistence of diverse rhythms influenced this interplay. Table 5.4 illustrates that, since diverse rhythms coexisted more harmoniously in the two complex centres (LC and SC), the children's lived space in these contexts was comprised of a broader range of opportunities for rich lived experiences than in the open-plan centres. However, the size of activity space also contributed by narrowing or expanding the range of opportunities available in the complex and open-plan centres. A broader range of options can be seen as layering together to 'thicken' children's agency (Klocker, 2007).

Table 5.4: Opportunities for child-friendly lived experiences in the centres, Chapter. 5

Children have opportunities indoors to:	CENTRE LC	CENTRE SC	CENTRE LO	CENTRE SO
choose sleep times	X			~
sleep undisturbed	X	X	X	~
find quiet spaces to rest at any time	X	X	X	X
find private space alone or with a friend	X	X		
engage in noisy or exuberant play without disturbing others	X	X	X	
play without noise restriction while others sleep	X	X	+	**
appropriate potential space for their own purposes	X	X	X	X
Play with few restrictions on mobility while others sleep	X	X#		X**

Key

X	Usually
X	Sometimes

~	Two-year-olds only (in separate sleep room)	+	Only occurred in outdoor room (not included in indoor m²)
**	Regularly woken by noise (Tulip room)	#	Dependant on whether one or both peripheral rooms are used for sleeping

Conclusion

In this chapter, I have used Lefebvre's (2004) notion of rhythmanalysis to analyse how the interplay of physical space, group rhythms, and children's navigation of space and time, impacted on their lived experiences. I have demonstrated that the size and configuration of the activity space in the four centres impacted on both the production of socially constructed group rhythms and on the ways children navigated space and time in response to their individual physical, social or emotional rhythms.

This chapter also illustrated how teachers acted as choreographers by structuring space and time to create routines that interacted harmoniously with children's cyclical (or biological) rhythms. However, in each of the four centres, the size and configuration of the physical space enabled or constrained teachers' options for achieving this. Large size and spatial complexity tended to restrict noise transfer and line-of-sight between areas and these aspects enabled diverse rhythms to more easily coexist in the two complex centres (LC and SC) than in the open-plan centres (LO and SO). However, size mitigated these impacts: small size narrowed the possibilities afforded by complexity, and large size reduced the limitations of the relatively open-plan indoor space at centre LO, as did its 'outdoor room'. Teachers in the small open-plan centre had the fewest options for creating diverse or flexible routines, particularly in centre SO's Freesia room where there was no possibility for separated sleep space. Here, collective sleep and rest routines that were 'out of sync' with some children's cyclical rhythms (Lefebvre, 2004) and created obstacles to children's individuality (Markström & Halldén, 2009).

In this chapter, I have also shown that children navigated space and time to meet their own goals. Children created their own routines in response to rhythms that they had come to understand and predict (Gallacher, 2005). They also appropriated potential and, particularly at the small centre SC, polymorphic space for their own uses and used peripheral rooms to engage in exuberant, quiet or private activity. In contexts where physical space enabled diverse rhythms and activity to coexist, children had many opportunities to exercise agency, for example by choosing to

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withdraw from others or to be exuberant or calm. In contrast, in contexts where diverse activities were forced together children had fewer opportunities to find privacy or quiet space or to exercise agency by contributing to the production of social space. This was particularly limiting of children's opportunities to experience rich lived experiences at the small open-plan centre (SO) where children found it difficult to find withdraw from others or to exercise agency in relation to the exuberance or intimacy of their play.

In summary, the size and configuration of physical space enabled or constrained teachers' options for choreographing each centre's everyday rhythms and children's opportunities to respond to their individual rhythms. Large size and spatial complexity combined to enable diverse rhythms to coexist more harmoniously. These contexts thickened children's and teachers' agency by affording more options for teachers and children to create flexible routines and more options for children to respond to their individual rhythms.

Chapter 6

CHILDREN'S MOBILITY AND SOCIAL INTERACTIONS

"Younger children journey together again"
(LO, 16.4.15)

A growing research focus on very young children's spatial experiences, recognises children as social actors who contribute to the production of their own childhood spaces (Einarsdottir, 2005b; Gallacher, 2005; Hackett, 2012; Holt, 2016; Horton & Kraftl, 2011; Raittila, 2012; Rutanen, 2012; Satta, 2015; Vuorisaloa et al., 2015). This chapter foregrounds the role of the material and social, as well as the biological world in this construction (Gallacher, 2016; James, 2000; Prout, 2011) and illustrates how "the material and biological are inextricably intertwined with the social and cultural, such that it is impossible to separate out young children from the environments in which they live" (Gallacher, 2016, p. 118). In this chapter, I demonstrate how the relational interplay of physical space (materiality), social relations (sociality), and children's mobility (biology) contributed to children's production of their own childhood social spaces and lived experiences. I use Gibson's theory of affordances (1979) to help explain how the three dimensions of Lefebvre's (1991) spatial triad interacted in relation to children's mobility and social play. In this chapter, I argue that the interplay between the size and configuration of the built environment and children's physical mobility influenced children's social interactions and, consequently, their contribution to the production of social space.

In contributing to answering my research sub-question "How do children occupy indoor activity space, transform it, and engage socially in spatially diverse ECE centres?" this chapter proposes that: (i) older and younger children's contrasting mobility patterns led them to occupy and transform open and enclosed spaces differently from each other; (ii) open-plan physical space afforded highly mobile two-year-olds opportunities to maintain line-of-sight with peers while 'on the move', and this enabled them to combine social interactions with their tendency for constant movement; and (iii) complex physical space afforded older children opportunities to protect their interactive social

space during less mobile play. These differences influenced the way children's "agency, actions or perspectives" (Hackett et al., 2015, p. 4) contributed to the production of their lived space. In this chapter, I refer to the two-year-old children in my study as 'younger children' and children who were three-years old and older as 'older children'. As explained in Chapter 4, the ECE centre programmes were all based on 'free-flow' play (Bruce, 2001) during which children moved freely between most spaces for long periods of time and, with the exception of some daily routines, activities were seldom timetabled. These periods of 'free-flow' play are the focus of this chapter.

Children's development

While developmental approaches have been critiqued for underplaying individual differences and the role of social and cultural contexts (Dahlberg et al., 1999; James et al., 1998) and for positioning young children as yet to learn and thus incompetent (Qvortrup et al., 1994), a developmental framework can still provide useful insights into how biological processes influence children's interests and behaviour (Adolph & Robinson, 2013; Smith, 2013).

Two-year-olds on the move

Data from my study confirm the view that younger children are highly mobile when compared to three and four-year-olds (e.g., Gesell, Ilg, & Ames, 1975; Greenman, 2007; Musatti & Mayer, 2011; New Zealand Ministry of Education, 1996; Olds, 2000). At the large complex centre (LC), I observed seven of the nine younger children making regular quick journeys, sometimes visiting up to five discrete spaces (different rooms and the hallway) within two or three minute periods (e.g., observation, LC, 18.6.15; 25.6.15; 28.7.15; 4.8.15). I also noted that one child's "journeying is almost continual" (Field notes, LC, 18.6.15). Similarly, at centre LO I observed that two-year-olds "...'trek' from the indoor to the outdoor continuously ... [and] run in circles around objects [such as tables] together" (Field notes, LO, 20.4.15). This is consistent with earlier findings that younger children's mobility opens up new kinds of interests that involve moving from place to place (Adolph & Robinson, 2013; Newcombe & Learmonth, 1999). Although often 'on the move', most two-year-olds in my study also engaged in less mobile activity

at times, especially when looking at books, using manipulative materials, observing older children's play, or when engaged in activities with adults.

While developmental processes may underlie the two-year-olds' level of mobility, there are several possible interpretations of their spatial practices that helped me consider how the interplay of mobility with physical space influenced the ways children contributed to the production of their own lived space. From an ECE perspective, schema learning theory (Athey, 2007) suggests that "apparent **wandering** by children is in fact them **wondering**" [emphasis in original] (van Wijk & Christie, 2008, p. vii) whereby children engage in patterns of repeated behaviour to, for example, explore spatial concepts such as proximity, enclosure, trajectory, rotation, circularity, and transporting (Athey, 2007; van Wijk & Christie, 2008). In my study, two-year-old children created circuits by repeatedly moving around or between places. For example, Anna, a two-year-old at centre SC, created a circuit around a large armchair that she repeated non-stop for several minutes (Video transcription, SC, 24.8.15) and Ella, a two-year-old at centre LO, created a similar circuit around the arm of a couch and a bookshelf. Although Ella initially appeared to move with no clear intent while observing older children playing on the couch, by her third circuit she was focused on the circuit itself – only giving passing glances at the older children. As she continued, two children of the same age joined her and a little queue developed as they waited to climb onto the couch's arm (Observation, LO, 20.4.15).

Younger children also created circuits around or across the entire indoor space. In this thesis, I describe this spatial practice as 'journeying'. During such journeys, children often transported materials, possibly as part of their exploration of spatial schema (transporting). Figure 6.1 illustrates two-year-old Robbie's mobility during two such journeys at centre LC (see also Appendix L for images of these journeys). In the first journey, Robbie moved rapidly through several distinct spaces. A few minutes later, on his second journey, Robbie moved in similar directions and this time transported items in a basket and deposited them on the way. Appendix L illustrates Robbie's actions during these two journeys.

An alternative interpretation of these journeys is to view them as children developing embodied knowledge through growing physical 'know-how' (Rasmussen and Smidt, 2003, cited in Hackett, 2015). Pink (2009) describes this as emplaced knowledge, a term that recognises the body as being inextricably linked to its sensory and material engagement with the environment. This means that, instead of experiencing the centre's spatial layout in isolation, Robbie experienced the social, material, and sensory aspects of space together. His growing emplaced knowledge was evident as he "...looked towards several pairs of gumboots by the lockers during his first journey, and carefully deposited small pieces of Lego into each one during his second" (Observation, LC, 28.7.15). By learning the gumboots' location and recognising their potential for his interest in enclosing items, Robbie's bodily movements became "a source of knowledge and subsequently of agency" (Pink, 2009, p. 4).

Figure 6.1: Robbie's two journeys at centre LC
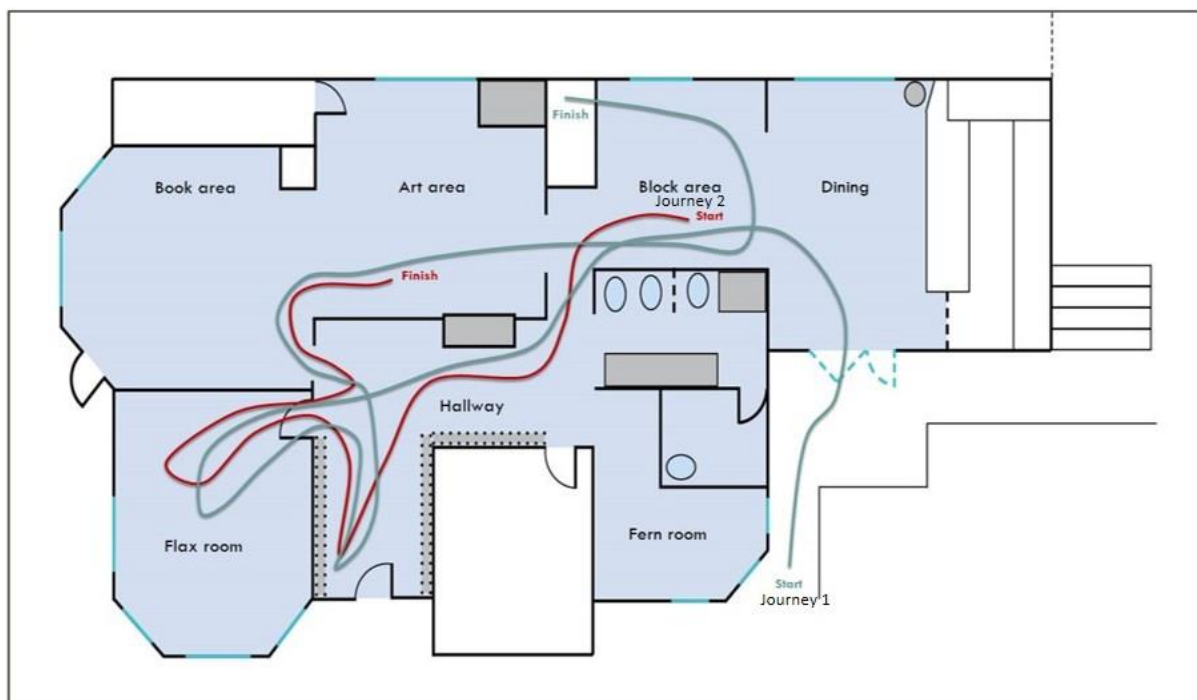
A third way of understanding two-year-olds spatial practices is to view them as a form of communication (Hackett, 2012). In Hackett's interpretation, walking, running, leading and following all act as "key elements of [children's] multimodal communicative processes" that contribute to their place-making activity (p. 3). At centre LO, I observed Esme and Ella (two-year-olds) using spatial practices to communicate their friendship.

They created a game by sitting in chairs situated several metres from each other. Figure 6:2 illustrates this observation:

> "Esme's waving to Ella calling 'Hi Ella', and then 'Bye Ella'. Ella waves back at Esme and laughs. Esme then runs over to Ella and says "Hi Ella" again. They both laugh and then Esme runs back across the room and sits on her chair. She repeats this." (LO observation, 13.4.15)

After a second similar event whereby both children again remained within each other's line-of-sight I noted that these children "used movement through space as part of their social interaction" (LO field notes, 13.4.15). While their mobility clearly acted as a form of communication that created meaning in space (Hackett, 2012), this example could also be understood as children's exploration of schema, in this case of the spatial concept of proximity (Athey, 2007).

Figure 6.2: Figure 6.2 Ella and Esme play 'Hi Ella, bye Ella".

Before discussing how the *size* and *configuration* of each centre's physical space interacted with these younger children's mobility and associated play interests, I will discuss some of the ways older children's development also appeared to influence their mobility, lived use of space and associated play interests. Then, in the second half of this chapter, I consider these overlapping motivations for play when I analyse how the

interplay of physical space and children' spatial practices influenced the younger and older children's opportunities to contribute to the production of social space.

Older children staying put

In contrast to younger children, older children (three and four-year-olds) in my study regularly spent prolonged periods of time in one space, particularly at centres LC, LO, and SC. For example, data from spatial mapping showed a pair of older children at centre LC occupying the Fern room for one and three-quarter hours almost continuously (Spatial mapping, LC 16.6.15). Time-dated images showed four-year-olds at the same centre: playing with Lego for one and a half hours continuously (Images, LC, 22.6.15); blocks for half an hour (Images, 25.8.15); at an art table for 55 minutes (Images, SC, 25.8.15); and half an hour involved in dramatic play on a couch (Images, LO, 20.4.15). When the older children in my study created new 'places' indoors by moving furniture and materials, the children themselves tended to stay within one area, moving to other spaces only to collect more materials. For example, I noted that children's movement between spaces at centre LC was "an integral part of the game, e.g., going out of a room so that you can be 'invited' back … or a means to an end, e.g., leaving a room to get cushions from elsewhere to bring back" (Field notes, LC, 18.6.15).

As with the younger children, the older children's tendency to remain in one space for longer periods may reflect aspects of their development. For example, Corsaro (2015) has argued that older children's peer play routines involve increasingly sophisticated verbal productions and attempts to share control with each other. Sharing often involves the creation and negotiation of complex rules (Smith, 2013), and in response to these interests, older children are motivated to protect their interactive space from intrusion by others (Corsaro, 2015). Corsaro (2003) points out that, unlike adults who are practised at suspending interactions in response to brief disruptions and then picking them up again, "it's not so easy for three-to five-year-olds" (p. 40) to do this. His empathetic reflection that "kids work hard to get things going and then, just like that, someone always messes things up" (p. 40) highlights the underpinning tensions that existed in some of the older children's peer interactions in my study. The highly negotiated nature of older children's play, and the associated motivation to protect interactive space during social play, may have contributed to the older children's

tendency to create and occupy particular spaces for prolonged periods, rather than constantly moving between spaces.

Older children did sometimes incorporate journeys into their play, although less frequently than younger children. In drawing attention to the impact of developmental shifts and age in relation to children's mobility patterns, my intention is not to argue that younger children are *always* 'on the move' or older children *always* static. Instead, my aim is to provide an explanation for observations that younger children *tended* to move more frequently than older children in all four ECE centres and to help consider how this influenced their experiences in diverse physical spaces.

The interplay of children's mobility, play interests and physical space

In the first half of this chapter, I have argued that older and younger children's contrasting mobility patterns contributed to shaping their spatial practices. The following sections build on this argument to illustrate how the interplay of these spatial practices and the size and configuration of physical space influenced their everyday experiences, including their opportunities to exercise agency. Lefebvre's (1991) spatial triad and Gibson's (1979) theory of affordances are brought together to analyse this interplay.

As I discussed in Chapter 2, a key aspect of a child-friendly place is an environment that "…promotes exploration and actualization of its many affordances for different activities and social interactions" (Chatterjee, 2005, p. 17). In Chapter 3, I explained that an affordance is the *opportunity* that an aspect of the environment offers an organism. An affordance is more likely to be actualised by children when they are not just aware of its physical structure, but also aware of its potential functional significance or meaning to them (Heft, 1988). When using a Lefebvrian lens to discuss space, its physical structure constitutes *perceived space*, and its meaning constitutes *conceived space*. In this section, I will argue that older and younger children actualised different affordances arising from the size and configuration of physical space (perceived space) in order to support their play interests. Children recognised particular affordances as more or less 'value rich' (Gibson, 1979, p. 140) depending on the meanings they ascribed to them. Further, I

argue that the opportunity to actualise *meaningful* affordances in relation to their play interests expanded children's ability to collaborate with peers and to 'frame' their own play (Emilson & Folkesson, 2006). This is significant because when children are able to lead or 'frame' their own play they can be seen as participating on their own terms and influencing their everyday life (Emilson & Folkesson, 2006). This type of participation provides opportunities for children to contribute to the production of their lived space and thereby act as social agents (Mayall, 2002). My study found that the size and configuration of physical space (perceived space) produced affordances that held different meanings for younger and older children. In this way, the physical space in each centre enabled or constrained children's opportunities to lead their own play and to influence their lived experiences.

I begin by demonstrating how unrestricted *line-of-sight* revealed itself as affording younger children opportunities to extend their social interactions. Younger children's actualisation of the unrestricted visibility afforded by open-plan space played a significant role in their ability to collaborate with peers because it enabled them to stay visually connected to each other while 'on the move'.

Younger children collaborating in open space

While the two-year-olds at all four centres were often 'on the move', two-year-olds at the complex centres (LC and SC) most often made journeys *alone* as illustrated by Robbie's journey at LC (see Appendix L). This tendency to journey alone contrasted with the experience of younger same-aged children in the open-plan centres (LO and SO). These children almost always journeyed in pairs or small groups.

The extent and frequency of the younger children's collaborative journeying at centre LO became clear early in the research process, as did the role of unrestricted line-of-sight in affording these opportunities. For example, I observed that David and Jane (two-year-olds) repeatedly wheeled buggies all the way from outside to the most distant inside space (near the lockers) while "…laughing and looking at each other a lot as they go" (Observation 16.4.15). After observing many similar events in the first few days of my research I noted: "younger children journeying together again" (Field notes, LO, 16.4.15). At centre LO, such collaborations sometimes included up to three or four

children who usually transported materials, including teddy bears, 'babies', bags, and buggies and often watched and waited for each other when moving as a group. Figure 6.3 illustrates one of these collaborative journeys.

Figure 6.3: A collaborative journey among two-year-olds at centre LO


Some of the teachers at centre LO were also aware of the toddlers' movement patterns. Tess (teacher) compared the centre's openness to the more complex renovated house she had previously worked in when she discussed the toddlers' mobility with Alice (teacher) during a focus group meeting:

> Tess: If you're in closed off spaces I don't think you have that free space which a lot of our young ones [have here]… I think this space allows them to run straight through…
>
> Alice: They get those trolleys and they go 90 miles an hour. (Focus group, LO, 24.4.15)

Figure 6.4 (over) illustrates the typical routes that children at LO followed on these journeys.

Figure 6.4: Typical routes of collaborative journeys at centre LO
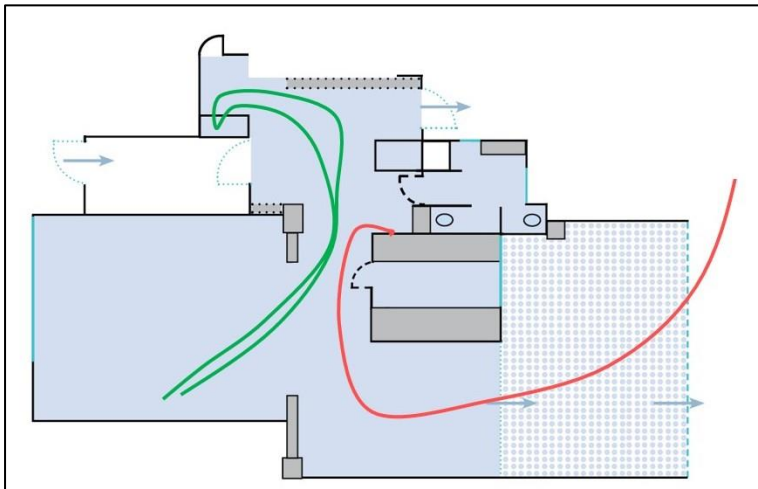
Collaborative journeying was also evident among younger children at the smaller open-plan centre (SO). For example, three two-year-old boys, Kahu, Tama, and Josh made use of unrestricted line-of-sight and collaborated while moving back and forth across space in preparation for a journey that eventually moved outdoors. I observed:

> Kahu and Tama put a teddy bear, book, and other items into a green bag… Josh looks towards them from the door and walks over to join them. Josh …takes a buggy and pushes it from the edge of the dramatic play area toward the middle of the room. Kahu puts the green bag over his shoulder and walks towards Josh saying "OK, let's go…" Kahu and Josh move towards the lockers [at the back of the room] and look back towards Tama [who hasn't joined them]. They turn around and go back to the dramatic play area… get an 'ice-cream' from a chair for a 'baby doll' [then]… Tama leading, they move towards the block shelves [across the other side of the room]… they wait while Kahu goes back to the 'kitchen area' where he collects more plates and puts them in the bag. Kahu returns and all three boys leave the room together and go outside. (Observation, SO, 23.11.15)

While groups or pairs of younger children at the smaller open centre (SO) made frequent journeys together, these often began inside and moved to the larger outdoor area where they created stopping 'places' along a circuit around the perimeter of the outdoor space. This was perhaps a response to the small size of centre SO's indoors, the close physical connection between the indoor and outdoor, and the attraction of perimeter pathway.

In relation to the role of visibility, the collaborative journeys at both of the open-plan centres (SO and LO) had similarities to the younger children's practice of making repetitive short trips over a shorter distance described earlier (see Figure 6.2). Here, Ella and Esme (centre LO) moved to and from each other rather than moving together – a practice I also observed during a game where they assigned meaning to two areas about eight metres apart: a pretend 'kitchen' and 'office', and repeatedly moved back and forth between them (LO observation, 20.4.15).

At both of the open-plan centres (LO and SO), children contributed to the production of lived space through these collaborative journeys and games involving repeated movement back and forth through space. They did this by actualising value-rich affordances that 'stood out' to their developmental interests (Withagen et al., 2012). In the open-plan centres, these affordances were visibility between themselves and friends while moving, and opportunities for unobstructed movement across space. By conceptualising open-plan (perceived) space as 'space for collaborative journeying', and by enacting collaborative journeys with others (lived space), the children brought all three aspects of Lefebvre's triad together to produce a social space that was in unison with their play interests. This meant that their construction of space, or "lived-through experiences" (Rutanen, 2012, p. 202) embodied their interests, capabilities, and friendships. In addition, the children's repetitive movements across space contributed not only to perceived space but to new representations of space (Lefebvre, 1991).

As occurred in the example of Ella creating a 'space of care' with her friends prior to her routine of end-of-day visit to the baby room (see Chapter 5), children also used the unrestricted line-of-sight in the open-plan centres to remain connected to happenings elsewhere in the centre. For example at centre LO:

> A group of two-year-olds moved chairs to the Lino area and created a [pretend] bus by lining up chairs right near the exit to the outdoor room, giving them a good view of … older children dancing outside, an activity that they watched as they played and later moved 'in and out' of together. (Field notes, LO, 13.4.15)

In this example, the children utilised unrestricted line-of-sight to construct a space in which their lived-through experience involved being part of a group in charge of their own play, while also using a visual access strategy to enter others' play from the safety

of their group (Corsaro, 1979). Here, the large open spaces enabled the younger children to lead their play as active participants rather than as passive observers.

Younger children's utilisation of the affordance of unrestricted line-of-sight is consistent with previous research linking visual connectedness to the quality and quantity of social interactions among two-year-olds (Campos-de-Carvalho & Rossetti-Ferreira, 1993; Legendre, 1999; Legendre & Fontaine, 1991; Legendre & Munchenbach, 2011; Musatti & Mayer, 2011). While these studies have focused on the role of visual connections *between adults and children* in their relationships, my study suggests that visual connectedness *among children* is also important. In addition, my observation that two-year-olds collaborated less often with peers in the complex built spaces compared to open-plan spaces contrasts with Legendre's (1999) finding that children with strong friendships interacted positively when out of adults' sight. Although adults were sometimes visually obscured from children in the complex centres, spatial mapping and images show that these children were also often in view of adults (Spatial mapping, LC, 16.6.15 & 22.7.15; SC 9.9.15 & 19.8.15). Instead, positive collaborative play appeared to be disrupted when children lost sight of each other while 'on the move' in complex spaces as I discuss in the following section.

Younger children losing each other in complex space

The indoor experiences of two-year-old children in the two complex centres contrasted with those of children in the open-plan centres. In the complex centres, younger children's journeys tended to occur alone rather than in collaboration with peers. In part, this appeared to result from the difficulty younger children experienced remaining visually connected to peers *while on the move*. The notion that these two-year-old children seemed to 'lose each other' occurred to me as I watched the only example of a pair of two-year-olds beginning to 'journey together' during my research at centre LC. After analyzing video segments, I noted: "At times, it seems that the children are unable to find each other" (Field notes, LC, 4.8.15). For example, Gus and Chris, both two years of age, had been jumping on beds together in the Flax room. They periodically ran into the hallway and then back into the room while remaining in sight of each other. They looked at each other, laughed, and said "we're running" (Video transcription, LC,

25.6.15). After about three trips, Chris ran out of the Flax room and instead of remaining in the hallway, he immediately turned left into the next room and went through the art area, block area and re-entered the hallway from a second entrance. Figure 6.5 shows a screenshot from a video clip of this journey as Chris (blond) returns to the hallway. Although Gus (circled) followed Chris out the room, he did not appear to know where Chris had gone and was still looking around in different directions when Chris returned to him.

Figure 6.5: Chris returns to the hallway while Gus looks for him at centre LC

Similarly, the following description of two-year-old Mae's attempts to follow Ali indicates that her ability to keep Ali within sight played an important role in staying connected to Ali. Mae, in her first month at the centre, was sitting at a table eating on her own when Ali (a three-year-old) joined her. They interacted a little by looking at each other, smiling, and holding pieces of food up to each other. When Mae began to pack away her lunchbox, Ali helped her to close the lid. While Mae put her box away on the shelf (half a metre away from the table), Ali left the table and walked through the nearby block area and was quickly out of sight. Mae moved to the entrance of the block area, apparently seeking to follow her. I observed:

> She stops for a moment and appears to look for Ali. She then turns
> around and moves back into the eating area and leans on the table
> again for a few seconds. Mae then goes and looks into block area again.

She does not enter, but returns to her lunchbox cubby and briefly looks at her lunch box. She then looks into the area again (3rd time). She appears not to want to enter the space…Ali is out of sight. (Observation, LC, 4.8.15)

Figure 6.6: Mae looking towards the block area after Ali

Restricted line-of-sight in this complex built environment appeared to constrain Mae's ability to act responsively to her emerging friendship with Ali since it did not afford her an opportunity to remain visually (and socially) connected to Ali. In Figure 6.6 Mae (circled) is looking towards the block area. Figure 6.7 shows Mae's restricted view as she looks towards the block area.

Figure 6.7: Mae's view when looking towards the block area after Ali
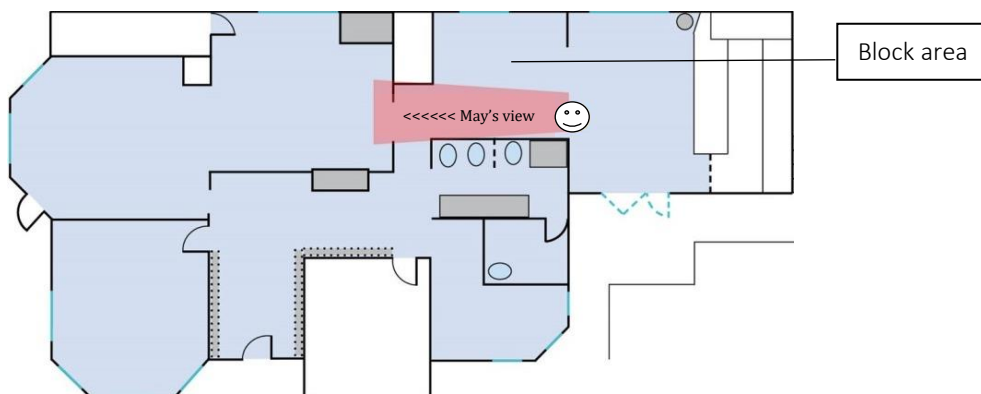
At the smaller complex centre (SC), the dynamic that I had observed in the open-plan centres of visual connection resulting in peer collaboration occurred in the outdoor area, particularly around a slide that had wide steps that created a circuit where the children could remain visually connected while moving. In this outdoor context, younger children interacted by making eye contact, instructing each other with simple phrases such as "go" and "come", waiting for each other, and adding and removing items from the slide for each other (Observation, SC, 17, 24 & 27.8.15). However, this type of social interaction seldom occurred indoors at centre SC. As with the other three centres, two-year-olds at centre SC were highly mobile and regularly interacted with and observed older children but, as with the younger children at the other complex centre (LC), they seldom collaborated with each other during their frequent journeys through indoor spaces. My observations at centre SC suggested that younger children not only found it difficult to remain visually connected in the complex space, but also became more distracted by others' actions as they moved through somewhat cramped smaller spaces at centre SC.

In both of the complex centres (LC and SC), older children's play scripts tended to dominate both the perceived and conceived domains of the spaces that they occupied and younger children (although very kindly treated) often took on the role of *observers*. For example, my observation of two-year-old Anna's exploration in centre SC's main room shows that her activity was closely enmeshed with the activity of others and, although Anna could 'scan' the environment within the main room she seemed to have difficulty finding space to appropriate for herself. As Anna attempted to occupy space beside a light table I observed:[20]

> While standing at the light table stacking little blocks, [Anna] steps back and unintentionally knocks over a construction built by older children. She looks around, and at the children who made it, then quickly walks to the dough table where she pauses and looks back again (about five metres away). She then moves to the entrance of the Kauri room (next to the dough table). She looks into the room and steps back - and repeats this twice more. She does not go into the room. (Observation, SC, 24.8.15)

I reflected that:

---

20 A table with a light that shines through its surface.

> It's interesting how many younger children go to a space and observe and briefly interact with materials before moving on … these younger children tend to observe others play, and move from place to place interacting with materials fairly briefly. They seem to not have ownership of the materials … and often seem to be trying to 'fit in' with the older children's perceptions of how the game will be played or how materials are being used. (Field notes, SC, 24.8.15)

Gallacher's (2005) study of nursery school children in Scotland found that power dynamics operated between adults and children whereby the "official world organised by adults and the peer culture 'underlife' [were] intricately intertwined" (pp. 258-259) and constantly jostled against each other. In the context of my study in *mixed-age* settings, this type of 'jostling' appeared to occur between older and younger children.

While the two-year-olds in the complex centres sometimes appropriated space and time for themselves, their attempts to do this often conflicted with the older children's peer collaboration. I deliberately refer to peer collaboration as opposed to peer culture in relation to my study because 'peer culture', as Corsaro (1988) has described it, arises from children's sharing of power among themselves in resistance to adult power. By comparison, in my study, I observed power dynamics between younger and older children.

In my study, younger children's ability to gain power through their collaboration with same-age peers was expanded in open-plan centres, particularly in large spaces where they had opportunities to remain visibly connected and easily move across space as part of their play. In these centres, the younger children collaborated over shared interests that included 'being mobile' (Musatti & Mayer, 2011), using movement as a form of communication and friendship (Hackett, 2012) and possibly the exploration of spatial concepts (Athey, 2007). Additionally, through these practices, they were able to act collectively as social agents (Mayall, 2002) who shaped their own social lives.

In summary, in open-plan centres younger children actualised the visual connections afforded by the lack of internal full-height walls (perceived space). These younger children assigned meaning (conceived space) to open-plan space by imagining it as space for journeying, exploring spatial concepts or communicating with others through movement. The children's spatial practices also contributed to the perceived space and, when combined with their contribution to conceived space, younger children could be

seen as contributing to the production of their own *lived space* as hybrid entities (Kraftl, 2013; Mannion, 2014; Prout, 2000). In contrast, the complex physical spaces of centres LC and SC constrained these opportunities for younger children because they afforded fewer opportunities for children to remain visually connected while 'on the move' and therefore to collaborate with each other. Further, two-year-olds' attempts to appropriate space in the complex centres often conflicted with the older children's peer collaborations and this constrained younger children's opportunities to contribute to social space, especially in the sometimes cramped space at the smaller complex centre (SC).

Older children sustaining collaborative play in complex space

Older children at all four centres tended to be less mobile than the younger children when engaged in play with others. They occupied and transformed enclosed spaces such as peripheral rooms for extended periods or used furniture and other materials to create and sometimes defend 'new' areas in open spaces. In the complex centres (LC and SC), sustained social play was particularly evident in enclosed peripheral rooms. Older children's interest in enclosed spaces is well documented (e.g., Einarsdottir, 2005b; Niklasson & Sandberg, 2010; Skånfors et al., 2009). However, somewhat surprisingly, children in my study occupied and transformed peripheral rooms with little active territorialisation or defence of the spaces. On analysing my digital images and observations, it was clear that the older children territorialised or defended areas more actively when they had created them themselves in open-plan spaces as opposed to when they occupied existing enclosed spaces.

This difference in the way older children defended spaces suggests that they found it less necessary to defend space in peripheral rooms that were cut off from the main flow of centre activity. This may be because the availability of enclosed spaces shifted the context from the image of a "cocktail party" (Corsaro, 2003) held in a shared open-plan space where sound transfers, to a party that is spread throughout a house (or ECE centre) where people gather in smaller rooms creating a sense of privacy and less distraction. For example, at centre LC four children in the peripheral Flax room closed the door to the room while building huts inside it. Two of the children were "…completely hidden behind the couch with blankets in place" (LC observation, 25.6.15).

All four children remained playing in the Flax room for one-and-three-quarter hours and only made short excursions to other places. Two of the children eventually transformed a third of the Flax room into what they described as "a campground full of chipmunks" (LC observation, 25.6.15). They made multiple huts while the other two children alternated between joining the chipmunk game and situating themselves a short distance away making pretend biscuits. They briefly took the 'biscuits' out of the room and offered them to children elsewhere in the centre before returning. Apart from these brief excursions, these four children seemed unaware of the goings-on elsewhere in the centre during these periods because they had limited visual or auditory connections with other spaces.

While additional children joined and left this play at times, I didn't observe any children who entered the room being excluded. The architectural boundaries (full-height walls) protected the children's interactive space by minimising noise transfer and distraction, and the number in the core group remained at four. The enclosed room also afforded children opportunities to spread open-ended materials, such as blankets, cushions, and 'junk materials' around the room and to transform the space without impacting on activities elsewhere in the centre, or on the orderliness (or stability) of spaces elsewhere (such as the lunch, art, or book area). This affordance is discussed further in Chapter 7.

A similar pattern of play occurred at centre SC, although the small size of the centre meant that the largest and most enclosed peripheral room tended to be more crowded when compared to the peripheral rooms at centre LC. As with centre LC, play in centre SC's Kauri room often involved open-ended materials and the transformation of space:

> There are about eight children in the Kauri room. They've arranged themselves at either end of the room. Two children, Liam and Tracy are by the window and are transporting a mix of materials [e.g., books, kitchen play equipment, blankets, cushions and so on].... The other children are on the big chair by the mirror [at the other end of the narrow room]. All the children seem to be involved in a game that involves robbers - with some being the robbers and some being 'away' from the robbers. They regularly move across the length of the room and then retreat back to their respective ends. Liam sees me and says "We're robbers and this is all the stuff we have robbed". (Observation, SC, 24.8.15)

During this game, the older children moved almost all the materials from one end of the room to the other, and then back again. In both examples (SC and LC), children's movements, noise transfer, the materials, and the enclosed architecture (all aspects of the perceived space), overlapped with the children's conception of these peripheral rooms as places for protected and prolonged play, and as 'spaces of freedom' where they could transform space without disturbing (or being disturbed by) activity elsewhere in the centre. In this way, the enclosed architecture of peripheral rooms could be seen as affording older children opportunities to produce social space that was in consistent with their play interests.

Older children creating and protecting space in open-plan contexts

In contrast, in the two centres with open-plan space where line-of-sight and noise transfer were not obstructed by full-height walls, older children used furniture and materials to add further definition to functional areas (such as the dramatic play area), or to spread materials to create 'new' areas. While the younger children also did this (for example, making a bus out of chairs as described earlier in this chapter), the older children's creation of a 'new' area was often the dominant feature of their play. When compared to children's use of enclosed spaces in the complex centres, older children in the two open-plan centres more often defended the spaces they created, particularly during their actual construction. This was illustrated in the larger open-plan centre (LO), where four older children used chairs and shelving to create a 'wet area' during a game they created about 'wet people'. They enclosed a corner near the outdoors by lining up chairs while discussing where the wet people would stand and where they would put their clothes. When Adam (two-years old) attempted to enter the space, Otis stood in front of him and said *you can't come in'*. The game continued for about ten minutes until the area was deemed 'finished' and they almost immediately moved away from the area and on to other play (LO observation, 21.4.15).

However, at centre LO the children did not always defend spaces they had created. For example, during the creation of a 'wedding' game, some three and four- year-old children created a 'venue' by shifting furniture – especially chairs. They lined them up and discussed how and where to create an aisle. Other children joined in and, although a

girl called Tyler took the lead in directing the play, others were not discouraged from joining. When completed, everyone in the centre was invited to the wedding which had clearly been conceived of as a shared space (Observation, LO, 14.4.15). Here, children's acceptance of others joining in depended on the purpose of their play.

At the smaller open-plan centre (SO), the older children in the Freesia room also created and defined spaces as part of their social play. However the small size and very open rectangular shape (as opposed to centre LO's T shape) meant that all play was visible (and often audible) to others in the room, and at times the room became congested and very noisy compared to the other three centres (see Chapter 5).

 In this context children often attempted to enter each other's interactive space, and this sometimes led to disputes and a sense of crowding. In one episode, six children began a game of 'doggies' and occupied the mattress in the dramatic play area. Two more children joined the game by offering 'food' for the dogs:

> After a few moments, they [six children] …place chairs across the front of the space. Two more children throw the 'food' at the doggies. Four more boys … seem to want to join the doggy game [standing close and trying to get through the chairs]. They're rejected by the others who tell them 'you can't come in'. The teacher intervenes and … suggests that the other children create another doggie game of their own. The four boys move across to the other side of the room and sit down by the block shelves... another child tries to enter the area closed off with chairs and children on the inside say "noooo". Two children appear to clench their hands and it seems as though it may become a physical dispute. (Observation, SO, 27.11.15)

As Corsaro (2003) has suggested, the six children playing the doggy game needed to 'work hard' to protect their play. The number of children and visibility of the play led to constant interruption in this small open space. However, the children's collaborative play was sometimes also interrupted by others' movements and noise as the following observation illustrates:

> Four girls … begin pretending to be cats. Parents and children are arriving and are moving across their [interactive] space to get to the nearby lockers. The girls seem distracted by this and do not focus on each other's actions. … children at a table nearby begin boisterously throwing plastic sticks. (Observation, SO, 19.11.15)

I reflected:

> This combination of distractions seems to 'blow apart' the cat play. It didn't really re-form after the parents left, and the four girls moved into slightly different spaces from each other. (Field notes, SO, 19.11.15)

And I later noted:

> The cat game had just begun to re-form when two boys ran through from outside to get to the lockers. They went through the middle of the game disrupting it. The noise level is fairly high. The children move the game around the back of the table. A boy comes to join them and one of the 'cats' says "Are you a cat or are you a bum bum?" He replies "cat" and joins the group briefly (about 20 seconds) and then moves away again. The cat game stopped shortly afterwards. (Field notes and observation, SO, 19.11.15)

While noise and others' movements disrupted play, the unrestricted line-of-sight and limited circulation space also enhanced the visibility of children's play to others. Consequently, it seemed that older children at centre SO had to work harder to limit the number in a group. This difference between the experience of the older children in the four centres is significant because maintaining small groups can enhance children's social lives because they "facilitate fruitful conflicts, investigations, and activities connected to what each child has previously said, [and enable] self-regulatory accommodations" (Filippini & Vecchi, 1996, p. 63). In this way, enclosed spaces in the complex centres (perceived space) can be seen as affording older children more opportunities to experience sustained play and positive social interactions.

In summary, older children in complex centres actualised the affordances of protection and privacy that were available in enclosed peripheral rooms. Children assigned meaning (conceived space) to these rooms as being good places for prolonged, uninterrupted social play where they could easily transform space with friends. In contrast, older children in open-plan space had to work harder to engage in uninterrupted play or to limit the number of children in a group, particularly in the smaller open-plan centre (SO). Further, children in the open-plan centres more often, although not always, defended their territory when creating 'new' areas when compared to children in the complex centres. This constrained their opportunities to become engaged in play for prolonged periods. As I will discuss further in Chapter 7, the open-

plan space also constrained children's opportunities to transform space, including by changing lighting and spreading materials.

Implications for children's lived experiences

In Chapter 2, and again at the end of Chapter 5, I outlined some of the child-friendly characteristics of physical environments described by Chatterjee (2005) and Kennedy (1991). At the end of Chapter 5, I identified a number of child-friendly experiences that had emerged from my findings and that reflected these characteristics (see Table 5.4). In this chapter, four further experiences emerged that were reflective of child-friendly characteristics of physical environments. The rich lived experiences that emerged in this chapter are summarised in Table 6.1. Table 6.1 also illustrates the extent to which the social/material/biological interplay in each centre produced contexts that were supportive of these experiences.

Table 6.1: Opportunities for child-friendly lived experiences in the centres, Chapter. 6

Children have opportunities indoors to:	CENTRE LC	CENTRE SC	CENTRE LO	CENTRE SO
play without regularly defending interactive social space	X	X	X	
easily find adults	X	X	X	X
notice goings-on in other freely accessible spaces	X	X	X	X
collaborate with peers while 'on the move' (two-year-olds)			X	X

Key
X Usually   X Sometimes

Clearly, the affordances available in each centre provided opportunities (see Table 6.1) that thickened or thinned younger and older children's agency differently. Older children had more opportunities to participate in the production of their own lived space when affordances arising from peripheral rooms were available to them. On the other hand, open-plan space afforded younger children opportunities to collaborate with others to participate in the production of their lived space. The ability to collaborate with peers was significant for younger children because, particularly in the

two complex centres, older children's play scripts tended to dominate the social spaces they occupied.

Conclusion

In this chapter, I have used Gibson's theory of affordances (1979) to help explain how the three dimensions of Lefebvre's (1991) spatial triad interacted in relation to children's mobility and social play. I have demonstrated how the relational interplay of the material, social, and biological worlds enabled or constrained children's opportunities to contribute to the production of their own childhood spaces and lived experiences. The interplay of the size and configuration of each centre's indoor activity space and children's developmental interests (e.g., younger children's mobility and older children's use of language and negotiation) and associated play interests meant that particular spatial affordances were more or less 'inviting' (Withagen et al., 2012) to children. This chapter has illuminated how younger and older children actualised different affordances that arose from the spatial layout of each centre. In particular, highly mobile two-year-olds utilised the affordance of unrestricted line-of-sight space to remain visually connected to peers while 'on the move' in the two open-plan centres. The availability of this 'value rich' (Gibson, 1979) affordance enabled younger children to conceptualise open-plan (perceived) space as 'space for collaborative journeying' (conceived space). In assigning meaning and appropriating it for this purpose, younger children contributed to the production of lived space that was consistent with their play interests and enabled them to 'led' their own play. This contrasted with younger children's experiences in peripheral, enclosed rooms where older children's play scripts tended to dominate. In this way, younger children could be seen as experiencing more opportunities to participate in the production of social space (as social agents) in the open-plan centres when compared to the complex centres where the affordances of physical space (restricted line-of-sight) constrained their collaborative social play with peers. This difference was particularly significant for younger children because, in my study, older children's play scripts tended to dominate the meanings assigned to space in the complex centres.

In contrast, restricted line-of-sight and restricted noise transfer in the two complex centres afforded older children opportunities to engage in protected and uninterrupted interactive play with peers. In utilising these affordances, older children were able to represent the space in ways that suited their play interests for prolonged periods (for example, negotiating the rules of slumber parties and robbers games and re-organising furniture and materials as part of their play). By transforming space to bring perceived and conceived space together, older children in these contexts experienced many opportunities to contribute to the production of a lived space in which the images and symbols that they lived through were in unison with their play interests. Finally, in this chapter I have also argued that the size and configuration of each centre provided a context that contributed to the thickening or thinning (Klocker, 2007) children's agency by enabling or constraining children's opportunities to participate in the process of the production of space as social agents. This was because, as discussed in Chapter 5, small size narrowed the possibilities afforded by complexity, and large size reduced the limitations of open-plan indoor space.

Chapter 7

TEACHERS NAVIGATING SPATIAL TENSIONS

*"…I always feel I want to engage with the children but I can't really
supervise here and there. It's a bit of a dilemma…"*
(Focus group, LO, 24.4.15)

In this chapter, I demonstrate how teachers navigated tensions that emerged as a result of the size and layout of the activity space in each centre. These tensions arose from the way *line-of-sight*, *noise transfer*, and *density* produced different affordances in each centre (for example, restricted *line-of-sight* afforded children opportunities to be out of adult's sight but also led to anxiety about teachers' supervision practices). The three tensions that arose were between (i) children's privacy and the teachers' role in supervising children and supporting their learning; (ii) children's loud exuberant play and opportunities for quiet and calm experiences; and (iii) children's ability to transform space (Kennedy, 1991; Nichols-Whitehead & Plumert, 2001) and the provision of varied and orderly (legible) material environments (Curtis & Carter, 2003; Greenman, 2007; Moore, 1986; Olds, 2000; Prescott, 1987). In navigating these tensions, teachers created rules and norms (conceived space) that regulated children's spatial practices (Gallacher, 2005). This chapter illustrates how teachers' navigation of these tensions contributed to the production of social space and influenced children's lived experiences. This chapter addresses my second research sub-question: how do teachers' conceptions and use of indoor activity space influence children's lived experiences? Since teachers' conceptions of space directly influenced children's occupation and use of space, this chapter also contributes to answering the first sub-question about how children occupy indoor activity space, transform it, and engage socially in spatially diverse ECE centres.

 Once again, I use Lefebvre's (1991) spatial triad and Gibson's (1979) theory of affordances to observe how these tensions influenced teachers' decision making and children's lived space. In my analysis, I shift my perspective between perceived,

conceived and lived space (Zhang, 2006). However, I use perceived space as an entry point from which to consider the interplay of these three dimensions of space (Rutanen, 2014). In Chapters 5 and 6, I demonstrated some of the ways that visibility and noise impacted on the children's lived experiences. For example, in complex space, restricted *line-of-sight* and *noise transfer* enabled diverse rhythms to coexist harmoniously and children to find quiet and private spaces (Chapter 5), while in open-plan space, unrestricted *line-of-sight* afforded younger children opportunities to remain visually connected while 'on the move' (Chapter 6). In this chapter, in addition to discussing how *line-of-sight* and *noise transfer* contributed to the tensions teachers experienced, I also introduce the idea that *density*, by which I mean more or less crowding of people and materials, contributed to and influenced the decisions that teachers made. I will discuss the three tensions in order, beginning with privacy and supervision.

Navigating tensions between privacy and supervision

In recognising children as both *being* and *becoming* citizens (Dahlberg & Moss, 2005; Smith, 2015; Sumsion & Wong, 2011; Uprichard, 2008), teachers balance images of children as 'competent' beings with children's rights to protection from harm, and their need for guidance (Smith, 2015; Woodhead, 2005). In the past two to three decades a rising concern with risk (Nimmo, 2008; G. Valentine & McKendrick, 1997) has created a cultural context that has challenged teachers' and policymakers' approaches to ECE experiences that, through their perceived risk, do not "...fit within a narrowly prescribed world of 'protected' childhood" (Nimmo, 2008, p. 6). In particular, concern about risk has created tensions between privacy and supervision in institutions such as ECE centres (McIntosh et al., 2010).

New Zealand's approach to the regulation of ECE centres is flexible and outcome-focused in many areas, leaving day-to-day policy decision to teachers and centre communities (New Zealand Ministry of Education, 1996, p. 10; 2004, p. 3). For example, the regulations require that centres' activity spaces are configured to support "effective adult supervision [so that children's access] ... is not unnecessarily limited" (Ministry of Education, 2017b, Criteria PF2). The regulations are silent about teachers' approaches to supervision practices but do suggest, through a guidance document, that "mitigation

strategies" ensure that teachers are "aware of any issues in blind spots" (New Zealand Ministry of Education, 2004, Guidance PF2).

In each of the four centres, *line-of-sight* influenced tensions that arose at the intersection of perceived space (physical) and conceived space (regulations and policies). Through the lens of Lefebvre's (1991) spatial triad, conceived space encompasses guidance and requirements in curriculum documents, government policies (such as regulations) and institutional goals (Rutanen, 2014) which contribute to the culture, values, and meanings evident in ECE centre spaces. As the following sections illustrate, most of the teachers in my study experienced some tension between the affordances of the physical space (for example, children's ability to be hidden from view) and both their image of children as competent beings with rights to some privacy, and their desire to remain connected and responsive to children's experiences and ensure their safety when out of sight. This was overlaid with policy and parental expectations about supervision and risk. These tensions permeated teachers' decision making and highlighted, not only the complexity of their decision making, but also the constraints that physical space placed on the range of options some teachers had to exercise professional agency.

Surveilling children in open-plan spaces

Teachers at SO (the smaller of the two open centres) experienced the most tension

between children's privacy and supervision. Management expectation that children were kept within teachers' *line-of-sight* was consistent with the open-plan design of the activity space and reminiscent of a panoptic style of architecture that facilitates surveillance (Foucault, 1991). However, teachers held diverse views about supervision, particularly in relation to three and four-year-old children and teachers at the complex centres were not expected to keep children within line-of-sight at all times. At centre SO, most of the teachers felt that constant surveillance conflicted with children's desire for privacy and ability to protect their interactive social space (Corsaro, 1997):

> Jo: I sort of feel … if you're a mother at home you make sure you can see what's going on, don't you?
>
> Sue: Well I disagree, I could be in the kitchen and they could be in the bedroom.

Caz (laughing): That sort of thing I do every day [at home], I don't think you need to be in the same room.

Sue: I think they should be allowed to be a little bit silly and mischievous and when you supervise all the time you can tell that their play changes in the way that they're constantly looking at you to see if you're looking before they have certain conversations. (Focus group, SO, 14.12.15)

However, while teachers felt concerned about children's lack of privacy, their ability to exercise agency when making professional decisions was constrained by both the open-plan room design and parental expectations.

Rata: But it's hard … some parents expect us to be watching their child all the time.

Maree: I think it's more about the parents' expectations than what children actually need. (Focus group, SO, 14.12.15)

Several teachers at centre SO said they would prefer to work in a space more 'like a house' with multiple rooms, although one teacher also pointed out that the unrestricted *line-of-sight* in the open-plan space enabled children to exercise agency in their everyday lives, particularly in their social lives. As Maree explained:

They can see what's going on and they can see what's on offer, and they can see their friends…they're not poking around looking for people and not being able to see what people are there. So I think in that way it can be quite empowering for them. (Focus group, SO, 14.12.15)

Maree's observations were consistent with my own observations of younger children's social encounters in particular (see Chapter 6). Another teacher, Chrissie, also pointed out that "children don't always want to be away from adults" (Field notes, SO, 17.11.15), a point that reminds us that while some children prefer rooms with doors they can close (e.g., Einarsdottir, 2005b; Skånfors et al., 2009), this may not apply to all children, or for all of the time.

 Teachers in centre LO's much larger, T-shaped built environment expressed similar tensions between the positive influence of unobstructed *line-of-sight* on relationships between teachers and children and concern that children needed more

privacy. They attempted to mitigate this by the way they arranged furniture and one teacher introduced moveable cardboard 'dividers' to increase the 'feeling of privacy', a strategy that has long been recommended as a way to balance supervision and privacy (e.g., Curtis & Carter, 2003; Greenman, 2007; E. Jones & Prescott, 1982; Kritchevsky & Prescott, 1969; Olds, 2000). Tess explained:

> I'd like to have more dividers rather than less … quite high ones. Because it's quite visible but for the children it gives them a semblance of completely being away from it all. From the teachers' perspective, it's quite good to have a visual glance. (Focus group, LO, 24.4.15)

In contrast to centre SO, centre LO's configuration and size did constrain line-of-sight from some vantage points, particularly near the locker area, and some teachers felt 'torn' about how to respond:

> Colleen: I mean I always feel I want to engage with the children but I can't really supervise here *and* there. It's bit of a dilemma, you almost want to sit here and watch them all around but that's not possible so what are you going to do?
>
> Lorna: Yes, you want to engage. (Focus group, LO, 24.4.15)

While these teachers were concerned about their engagement with children, safety was a concern for one teacher, Julie. She explained that a child in a small area that was out of the teacher's line-of-sight (near the lockers), "…dragged a chair to the sign-in table, [and that] they were quite capable of climbing onto the desk - so they'd be able to get into the hallway and open the front door" (Focus group, LO, 24.4.15). During the beginning of my month in centre LO, I had noted that teachers discouraged children from playing by the lockers which, although not out of sight, were situated several metres away from the 'main' activity space. Later during the month of my research, I noticed that teachers increasingly responded to children's occupation of this area by 'turning a blind eye' rather than discouraging them:

> Tess: when I come in at 9 o'clock there's often a little group of children sitting at the table there [near the lockers] and just having a bit of a yardie yar[21] … it's great to just see them use it because they get a sense

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21 A NZ slang word for 'informal chatting'.

of the space being out of the way a wee bit (murmurs of agreement from others).

Colleen: ...it's privacy, where they talk and they have a bit of a space to communicate.

Tess: Even without teachers being part of it.

Colleen: Yeah...

Tess: It's sort of independent space.

Lucy: I struggle with that area in my mind a bit, I really like what you've all said about using the area but find it gets so messy over there [now that children are using it more often] that I want to sort of shoo them away (laughter). (Focus group, LO, 23.4.15)

In progressively 'turning a blind eye' to children's occupation of the 'locker space' during my research, the teachers' actions played an important role in enabling Ella, Esme and Adam to appropriate this space for their end of day routine (see Chapter 5). This locker area created a "small gap" within power relations between adults and children (Seymour, 2015) and children's 'unauthorised occupation' resisted adult power in a similar way to the two-year-olds' movement away from mat-time at centre LC (see Chapter 5). In this way, a small amount of complexity in the built environment enabled a two-way interplay to occur between perceived and conceived space, and for children and teachers to contribute, through their negotiations, to the social space produced. This illustrates not only how the outcome of past actions (in this case both the children and teachers) permitted fresh action to occur in the (ongoing) production of space (Lefebvre, 1991), but also how the tensions between perceived and conceived space opened a gap for this to occur. Tensions between supervision and privacy can therefore also be seen as involving power relations.

Teachers at centre LO (as in the other centres) felt concerned about holding too much power in relation to children but were also aware of their role in supporting children to feel affirmed and safe (McIntosh et al., 2010):

Julie: I don't want to always be going around there saying 'ooo come away from the door'.

>Lucy: I think it's hard if you've got space available to children to then try and tell them that they can't use it ... like why should they not use it?

>Tess: I think that with the mixed age we need to be aware of who is in the spaces because ... like Jane and David might be sitting ... around the corner where you can't see them - you kind of know that they're going to be fine. But if there was ... a child given a bit more to aggression, or you know ... in edgy moods, then they need to be under closer supervision. (Focus Group, LO, 23.4.15)

Apart from the locker area and surrounds, children at centre LO were constantly within teachers' sight and this meant that, as with teachers at the other open-plan centre (SO), teachers' had few options for supporting children's privacy. In this way, 'open-plan' physical space (perceived) can be seen as limiting the possibilities teachers and children had to apply diverse meanings to space (conceived space). Similar to the arguments I made in Chapter 5 about diverse and collective rhythms, these constraints meant that teachers' conceptions of open-plan space became dominated by a collective approach to supervision (surveillance) rather than by diverse approaches that shared more power with children as occurred at the two complex centres. Further, this more collective approach constrained the opportunities children had to experience privacy.

Negotiating children's mobility in complex space

In contrast to the open-plan centres, teachers' *line-of-sight* into some rooms in the two complex centres were restricted and this forced them to make intentional decisions about their supervision practices and children's access to these areas. They had choices. Specifically, teachers were forced to decide whether or not to restrict children's mobility in order to ensure "effective adult supervision" (Ministry of Education, 2017b, Criteria PF2). In addition, teachers needed to decide how to maintain sufficient visibility to maintain responsive relationships between themselves and children. Teachers in both of the complex centres (LC and SC) made conscious decisions not to restrict children's mobility and instead allowed children 'free access' to hidden spaces.

The mitigation strategies these teachers used to manage 'issues in blind spots' (New Zealand Ministry of Education, 2004 Guidance PF2) involved practising a different form of supervision to the teachers in the open-plan centres. Instead of employing constant

surveillance aided by the configuration of the open-plan space, teachers at both of the complex centres involved children in managing their own behaviour through a combination of self-surveillance, self-discipline (or self-regulation) and being subject to the normalizing judgments of peers (Foucault, 1991). These practices are influenced by the idea that children are governed through social learning to act in accord with what is expected. For example, children learn that particular styles of play are acceptable, in part, because these understandings are reinforced by peers (Cobb, Danby, & Farrell, 2005).

Centres employed a variety of strategies to create rules and cultural norms (conceived space) about behaviour. At centre SC, teachers and children negotiated the rules that governed children's practices in hidden spaces at regular group meetings. Once agreed, rules were written down and the older children signed their names as part of these meetings. Ana (4 years old) explained that children could play in enclosed rooms "if you copy the rules … you write your name down so the teachers know that you're going to promise to do the rules" (Field notes, SC, 17.8.15).

Teachers at centre LC took a less overt approach and expectations about the use of hidden spaces were more subtly embedded in the centre's cultural norms.

Angie: Well what we've done is try to create an environment and culture whereby children have got the choice and the freedom to use space independently and they know how to do that because they have been provided with the culture and the support to have privacy. (Focus group, LC, 21.7.15)

Children at centre LC sought teachers' help when needed and, as with children in all the centres, teachers supported them to manage social relationships constructively and fairly when they were aware of children's need for support.

These relatively high trust approaches to supervision were consistent with ECE centre regulatory requirements, however they are not necessarily indicative of the approach taken in other NZ centres. For example, Lucy, a teacher at centre LO, described hating a previous job she had had in a complex centre because the centre's policy only allowed children access to rooms if adults were present. This resulted in adults working in

separate spaces to each other and reduced the amount of space available to the children if adults weren't available (Focus group, LO, 24.4.15). Similarly restrictive policies and practices in NZ ECE centres have been documented elsewhere (e.g., Te One, 2008).

Although some teachers supported children's freedom to seek independence in enclosed, peripheral rooms in the two complex centres, they also experienced tensions about their ability to remain connected and responsive to children's social and emotional needs at all times. Karey (centre SC) explained that when she sensed a problem in the Kauri room she felt that going in there disrupted her focus with the children she was engaged with in the main room. In addition, she noted: "Children often sort things out for themselves and it's hard to know when to intervene [but] it's difficult to make these decisions when you can't see what is happening" (Field notes, SC, 24.8.15).

Karey's concern about her ability to remain engaged when she "sensed a problem" elsewhere was reflected in an interesting observation made by a teacher, Lorna, at centre LO. Lorna described a spatially complex centre that she had previously worked in and observed that, at times, it was "...quite hard for the younger children because the teachers were always moving around and didn't sit down and spend lots of time with the children because I think they thought the corners were too blind" (Field notes, LO, 16.4.15). Lorna's comment suggests that this tension between relationships and *line-of-sight* is not peculiar to the centres in this study and her analysis is consistent with Musatti and Mayer's (2011) findings that, for very young children, "the permanent location of the educator ... represented a reference for the children's clustering and reciprocal attention" (p. 218).

These teachers were concerned about relationships, rather than safety or risk, despite working in a cultural context where concerns about risk have influenced policymakers (Nimmo, 2008, p. 6). For example, advice in child protection guidelines to "... avoid staff being alone with children" (New Zealand Government, 2015, p. 35) reflects the extension of child protection concerns to include protecting children from their own teachers (Jones, 2004). Despite such guidelines, teachers in both the complex centres were regularly alone in rooms with children.

The tensions between privacy and supervision were situated at the socio-spatial intersection of people and physical space. Lefebvre (1991) suggests that, of the three dimensions of the spatial triad, conceived space tends to dominate the production of social space because it is the space of "planners, social engineers, and those in power" (p. 38). My study suggests that open-plan architecture dominated social space by reflecting particular constructions of childhood (Kraftl, 2006). It represented a complicity between building design and a surveillance society (Jones, 1999). However, *within* centres (the scope of this thesis) teachers' values and professional judgments were represented in day-to-day decisions they made about children's access to, and use of, space and in this context teachers became the planners, social engineers, or those in power (Lefebvre, 1991).

In the two open-plan centres, teachers' conceptions of space were dominated by the openness of the physical space (perceived space). Here, the openness of the physical (perceived) space was so tightly aligned with the concept of surveillance (conceived space) that it left teachers and children few options for conceptualising the space differently and as a result constrained teachers' and children's opportunities to exercise agency in the production of social space. In contrast, greater spatial complexity enabled a greater two-way relational interplay between perceived and conceived space and this afforded teachers more options for exercising agency when making "judgements about what is desirable for children and how to achieve it" (James & Prout, 1990, p. 65). The decisions the teachers in the two complex centres made to allow children to be 'out of sight' were crucial in opening the way for these children to actualise affordances available in enclosed rooms and, as I demonstrated in Chapters 5 and 6, the availability of these affordances was crucial in enabling children to exercise agency. Therefore, in complex centres, teachers' decisions contributed to the production of social space directly and indirectly by allowing children access to hidden spaces. By creating rules and norms that enabled children to actualise a wider range of affordances, teachers in the complex centres also increased the potential for children to appropriate enclosed rooms in diverse ways (see Chapters 5 & 6) and thereby their opportunities to contribute to the production of social space and to their own lived experiences (lived space).

Navigating tensions between loud versus quiet noise levels

The second tension teachers experienced was between loud exuberant play and maintaining opportunities for children to experience quiet noise levels consistent with low-stress environments. This tension was influenced by the social-material interplay of *noise transfer* and physical space. Table 5.1 (Chapter 5) shows that during the morning, children in the two open-plan centres (SO and LO) experienced higher average decibel levels (L_{Aeq}) than the children in the two complex centres (SC and LC). Children in centre SO experienced the highest average decibel levels (L_{Aeq}) of the four centres (70.4 and 69.7 dB in the Freesia and Tulip rooms respectively). As explained in Chapter 5, the level of noise transfer was higher in the open-plan centres when compared with those in the complex centres where the average background noise levels *differed between the 'observed quiet' and main areas*, particularly in the larger and most complex centre (LC). Further, between 9.30 – 11.30am (a period uninterrupted by sleep-times and lunch), centre SO's background noise levels (Freesia and Tulip) were more than four times higher than those in centre LC and SC's main *or* quieter areas during the same period (a difference of more than seven decibel levels (L_{Aeq})), and more than twice as high as levels in the larger open-plan centre.

As I explained in Chapter 2, acoustics significantly impact on children's lived experiences, particularly in relation to collaborative social interactions (Maxwell & Evans, 2000; McLaren & Dickinson, 2003, 2005; J. Valentine et al., 2002). Children in NZ ECE centres have previously been found to experience average decibel levels (L_{Aeq}) far in excess of World Health Organization (WHO) recommendations (McLaren, 2008). The WHO recommends levels of 35-40 dB in school classrooms to prevent interference with normal speech (Berglund et al., 1999). According to McLaren (2008), to achieve effective speech communication, a person "speaking at 65 dB would need a *background* noise level no higher than 50-55 dB" (McLaren, 2008). It is therefore particularly concerning that the average background noise levels in the main areas of all four centres' were above 55 dB (Table 5.1).

Noise transfer, as with *line-of-sight*, caused some teachers in the four centres to experience tensions at the intersection of perceived space (noise levels) and conceived

space. In addition to concerns about children's wellbeing, NZ's ECE regulations (2008) and associated criteria (2017) (conceived space) require that indoor activity space is "sufficient and suitable ... [for] noise control" (New Zealand Government, 2008, Clause 45, 1 (a)), and has "quiet spaces ... [and] areas for physically active play..." (Ministry of Education, 2017b, PF 1). This means that teachers needed to balance children's desires to be loud and their opportunities to participate in calm and peaceful experiences in quiet spaces. NZ's low minimum standard for the amount of space (2.5 m^2 per child) has contributed to this challenge since it has been:

> ...the subject of frequent criticism by teachers ... [with the] widespread belief that the space standard was insufficient as it didn't require or allow for the centres to create quiet spaces. (McLaren, 2008, p. 9:16)

The following section illustrates how noise transfer (perceived space) and teachers' efforts to balance noisy and quiet experiences through rules and norms (conceived space) influenced the ways that teachers conceptualised and structured space.

Restricting noise levels to prevent "Hooning"22 in open-plan space

As Chapters 5 and 6 have illustrated, the degree of *noise transfer* between spaces impacted on how people conceptualised and used space, for example during sleep times and during noisy and quiet play. In the open-plan centres (SO and LO) *noise transfer* influenced the entire space and teachers responded to the potential for high noise levels by regulating children's spatial practices in the interest of the collective group. Maree explained:

> You want to have a space that's quiet and calm, and you want to have a space that is more active, so it makes sense that your inside space would be your calm space and your outside space would be your noisy and active space. Because it is not fair on children who want to sit down and read a book if someone is hooning around the room, especially in a room that size. (Focus group, SO, 14.12.15)

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22 'Hooning' is slang used in NZ and Australia to describe people behaving in a loutish way. In this context it was used to describe boisterous play.

While monitoring of sound is a form of surveillance and its control a form of power (Gallagher, 2011), Maree's comment illustrates how teachers' regulation of noise arose from a concern for children's wellbeing in a constrained physical space. However, some teachers at SO also expressed ambivalence about restricting noisy or active play. Chrissie explained that, while they told children to use 'walking feet' inside, "…sometimes they might actually be dancing, then you're telling them they can't dance … what right do you have to be like … you're not allowed to dance in here?" (Focus group, SO, 14.12.15). As I explained in Chapter 5, despite attempts by teachers to constrain noise levels, children at centre SO found it difficult to find quiet spaces indoors. One child told me that "…[we] don't have any quiet spaces" (Field notes - Wai SO, 19.11.15) and one teacher at centre SO (Tulip) observed children whispering when it was quiet, suggesting that silence was rare (see Chapter 5). Although noise levels and noise transfer were less pronounced in the larger open-plan centre (LO) (see Table 5.1), as I explained in Chapter 5, teachers at centre LO also conceptualised the entire indoors as quiet space, particularly on wet days.

Balancing rowdy and quiet experiences in complex space

In contrast to the open-plan centres, the distinct difference in noise levels between the quiet and main areas at the largest complex centre (LC) (see Table 5.1) illustrates the way noise transfer was restricted by full-height walls and distance between some areas. Although noise levels at centre LC were high at times, levels in the 'quieter area' (Fern room) were sixteen times lower than in the main area (see Table 5.1) despite my observation that the Fern room was used for exuberant and loud play as well as quiet play. This differentiation in noise levels (perceived space) enabled teachers in centre LC to place few controls on children's noise levels without compromising other children's opportunities to experience quiet spaces. For example, teachers occasionally asked children to move to an alternative indoor space but seldom asked them to go outside or to play quietly. This was the centre where, in Chapter 5, I described how a group of children moved their superhero game into the Fern room after disturbing a story in the main area (Chapter 5).

Exuberant indoor play reflected the culture of centre LC, but this culture was enabled by the physical space. In response to my comment that "…teachers seemed to encourage

loud and boisterous play", Angie replied, "Yeah, and if we had an open-plan setting I think it would be difficult for children ..." (Focus group, LC, 21.7.15). Kim (another teacher at centre LC) had earlier explained that because children could be so boisterous *inside* "Some days hardly anyone goes outside ..." (Gruffalo story, LC, 16.6.15).

Clearly, the containment of noise within rooms expanded children's choices about their indoor activities and experiences. For example, during a half-hour time period at centre LC, I observed children "talking, laughing and jumping on beds" in the Flax room and, at the same time, one child, Joe, was in almost complete silence while curled up in a 'post-box' on the floor of the Fern room (see Figure 7.1 below) (Observation, LC, 25.6.15).

Figure 7.1: Joe curled up in the post box - Fern room at centre LC

Figure 7.2: Talking, laughing and jumping on beds - Flax room centre LC

In the smaller complex centre (SC), containment of noise was less effective with average background noise levels in the quiet area being about two-thirds of those in the 'main area' (see table 7.1). This is consistent with the notion that size plays a role because distance influences noise transfer (McLaren, 2008). Size is also likely to play a role in noise levels due to population density in each centre. Spatial mapping indicated that the peripheral areas in centre SC were more populated than those in centre LC. Despite this, children at the smaller complex centre (SC) were often allowed to make noise in the peripheral Kauri room because it didn't necessarily disturb people in other parts of the centre (Focus group, SC, 2.9.15). In response, children regularly transformed the Kauri room by turning off lights and dancing, or jumping on and around the big old chair in the room as part of their play (e.g., Video, SC, 24.8.15).

However, one important point of difference in the way teachers in centres SC and LC conceptualised space was that centre SC teachers treated the two peripheral rooms differently from each other. In the smaller centre SC, teachers created a culture of 'quiet' in the Rimu room[23] but not in the Kauri room. In doing this they ensured that the Rimu room was always available as a quiet 'retreat' space. They achieved this by sparsely furnishing it with books and cushions (although children were free to bring materials to this space) and imparting a clear message about its use by naming it with a word meaning 'quiet retreat'.[24] This room was often used for quieter teacher-led activity such as massage, or used by children alone or in small groups.

This arrangement made me reflect on practices in the larger centre LC where one four-year-old girl told me that she found the whole centre noisy (Gruffalo story, LC, 16.6.15) despite my observation that there was almost always a very quiet room available. A possible reason for this child's perception could be that at centre LC, the 'quiet space' constantly shifted position in response to children's activity so that its location might not be obvious to a child looking for a quiet space. While the approach that the teachers at centre SC took to conceptualising one particular space as quiet may have constrained some children's ability to be loud in this space. Decisions by teachers also seemed to

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23 The Rimu room was not selected as the 'quiet' space for the purposes of noise measurements because it was also used as a sleep area (which I also avoided in centres LC and SC as explained in Chapter 4).

24 I have not use the original name of the Rimu room in this thesis to protect the centre's identity.

create opportunities for some children to exercise agency by choosing the noise levels they experienced.

In summary, as with tensions between privacy and supervision, the tensions between loud and quiet noise levels arose at the socio-spatial intersection of people and physical space. While there was some noise transfer in the complex centres, the magnitude of the difference in noise transfer between the open-plan and complex centres was surprising and teachers in the open-plan centres responded to the phenomena of 'shared air' (McLaren, 2008) by creating rules and norms that positioned the entire indoor space as 'quiet space'. This response reflected the tensions between individual and collective interests described by Kennedy (1991) in Chapter 2, and meant that conceived space was both dominated by a discourse of 'being a member of a collective' (Markström & Halldén, 2009) and, in relation to noise, dominated the production of social space. The collective approach constrained children's options for being exuberant or loud indoors, and this narrowed their opportunities to exercise agency in their everyday lives.

In contrast, since different noise levels coexisted more harmoniously in the complex centres, teachers in these centres had more options to balance "the personal and the collective" (Kennedy, 1991, p. 44) and therefore more opportunity to exercise professional agency. As I explained when discussing the tension between privacy and supervision, conceived space, as with other aspects of Lefebvre's triad, represents outcomes of past actions (Lefebvre, 1991) meaning that conceived space is reinforced by norms and rules *over time*. In the complex centres, teachers' previous decisions to allow children access to enclosed hidden spaces (despite some concerns about supervision) contributed to their ability to balance individual and collective interests and allow children to assign diverse and changing meanings to distinct spaces of the centre (which may include loud superhero play or quiet reading). In complex centres, teachers' and children's increased opportunities to exercise agency (when compared to open-plan centres) meant that, in relation to noise, an on-going interplay between perceived and conceived space occurred through mutual negotiation whereby children and teachers were both able to influence perceived space (e.g., noise levels) and the conceived space (e.g., conceptualising spaces as noisy or quiet at different times).

Navigating tensions between children's transformation of space and the provision of varied and orderly environments

The final tension teachers experienced was between children transforming space and the teachers' role in curating varied and orderly (legible) environments that encouraged small group interactions. This final tension was influenced by *line-of-sight*, *noise transfer* and *density* (of people and materials) in each centre. *Density* impacted on the production of social space in complex and nuanced ways. High *density* (of people) has long been associated with excess stimulation, lack of privacy and feelings of crowding among adults, although people's thresholds differ (see Chapter 2). Architectural barriers (such as the full-height walls found in the complex centres) influence patterns of space use and can reduce feelings of crowding (see Chapter 2). For example, in my study, restricted *noise transfer* and restricted *line-of-sight* between peripheral rooms and other spaces afforded children opportunities to use these enclosed rooms to withdraw from others (Chapter 5, see also Skånfors et al., 2009), protect their interactive space (Chapter 6), and to participate in routines that were responsive to diverse group and individual rhythms rather than being dominated by collective rhythms (Chapter 5). However, my research also suggests that the size and complexity of physical space influenced children's opportunities to transform space by rearranging and spreading materials – an under-researched aspect of density in ECE centres.

As I explained in Chapter 2, a large body of research associates well-defined 'activity areas' that have clear boundaries, circulation space, and accessible and well-presented materials with: positive social interactions among children (e.g., Legendre & Fontaine, 1991; Moore, 1986); children's immersion in activities (Moore, 1986); higher frequency of use (Campos-de-Carvalho & Rossetti-Ferreira, 1993); and increased independence and competence. Independence and competence arise, in part, from children knowing where to find things (Maxwell, 2007; Trancik & Evans, 1995; Weinstein, 1987) and suggest that a degree of order, or legibility, is important. However, children in highly organised spaces have also been found to be less likely to move equipment between spaces (Nichols-Whitehead & Plumert, 2001) and this limits their ability to transform or determine the use of space. The opportunity for children to transform space is an important characteristic of child-friendliness (Chatterjee, 2005; Hart, 1979; Kennedy,

1991), and is a characteristic that expands children's ability to contribute to the production of social space through their actions.

Imposing order in open-plan centres

In my study, teachers in the open-plan centres (LO and SO), conceptualised the indoor activity space as being 'formless' and 'in need of order'. Teachers intentionally divided spaces by arranging furniture and materials to create 'functional areas' such as art, book and block areas. In doing this, teachers brought conceived and perceived space together in unison – each was reliant on the other so that the arrangement (perceived space) imparted messages about the expected norms governing space use (conceived space). Caz explained, "We try and set up [the environment] to encourage small groups of children as much as possible … and we kind of do it by area as well, like a book area and art area" (Focus group, SO, 14.12.15). In this way, teachers' representations dominated conceived space.

However, teachers sometimes found it difficult to create well-defined areas, particularly in centre SO where Rata explained that she found it "hard to make corners" for children's play because of the number of doors and the lack of internal walls. In addition, Jo described the Freesia room as being "a bit like a funnel when the doors are wide open" (Focus group, SO, 14.12.15). This latter aspect was clearly evident in video data, particularly on windy days when materials were occasionally blown from tables (Video, SO, 17.11.15).

Although teachers sought to create an orderly environment, they often responded to children's interests when setting and re-setting these areas throughout the day. For example, Rachel helped children create a stage at centre SO, while another teacher worked with children to tape off an area of floor space to protect block play that spread across the room. Similarly, Alison, a teacher at centre LO, watched children build a 'robbers' house' by shifting chairs and shelving alongside a large dolls house and climbing in the 'window' by climbing over the shelves. She allowed them to appropriate materials, and only prevented them from climbing the shelving:

160

> Alison: Can you use your door, I know robbers usually break in through windows but ...
>
> Joe: yeah we're breaking in through the windows.
>
> Alison (laughing)... Even for robbers, there is a code of conduct...
>
> Alison asked the children not to climb on the shelves and they begin climbing over the chairs instead. (Observation, LO, 28.4.15).

These examples illustrate the way teachers, in balancing stability and children's desire to transform space recognised the importance of interplay of people and materials and found ways to support children's interests and agency. Through these practices, teachers shifted the balance of power towards children so that, although teachers did impose order on open spaces and held more power than children in this process, children had some opportunities to transform space in negotiation with teachers. However, when materials encroached on others' play, teachers and other children acted to constrain the 'spread' of materials, particularly when the centre was small. I discuss this towards the end of this chapter in the section titled 'size matters'.

Allowing fluidity on the periphery of complex centres

In contrast to the open-plan centres, the teachers in the complex centres (LC and SC) did not consider the peripheral space formless and 'in need of order' to the same degree and the semi-enclosed architecture of peripheral rooms (perceived space) minimised the extent to which materials encroached on other areas. As spatial complexity can moderate the effects of crowding by separating people into smaller groups (Evans et al., 1996), the 'containment' of materials also seemed to moderate the effects of *density* by affording a degree of 'contained disorder'. The layering together of 'contained disorder', restricted *noise transfer* and restricted *line-of-sight* meant that, when compared to children in open-plan centres, children in the complex centres had more opportunities to transform or to leave their mark on space (Kennedy, 1991) (see Chapters 5 and 6). In addition, possibly because of the wide range of affordances (Chatterjee, 2005) available, the sometimes 'disorderly' arrangement of materials and furniture in complex spaces seemed to matter less in relation to children's engagement than the literature (e.g., Campos-de-Carvalho & Rossetti-Ferreira, 1993; Moore, 1986) suggests.

The enclosed architecture of peripheral rooms seemed to provide sufficient spatial definition to minimise distraction and provide legibility and, as a result, teachers did not need to 'impose' as much order on these spaces to ensure that they were inviting to children. When compared with open-plan spaces, the combination of less structure (of the material environment) and more opportunities for children to spread materials and choose between privacy and noisy or quiet play, meant that these spaces were viewed by some teachers as places of freedom. Sana (teacher at centre LC) explained:

> Yes, they just love even the Fern room, I think they like to be left by themselves to play how they want. That's helpful when we have so many spaces around, you can choose if you want to go away somewhere (Field notes, LC, 15.6.15).

The conception of these enclosed rooms as spaces of freedom was also reflected in the teachers' choices of materials. As I briefly explained in Chapter 6, the enclosed rooms in both of the complex centres (LC and SC) tended to include 'open-ended' materials such as dress-ups, blankets and household items, as well as old couches and climbable armchairs (with the exception of centre SC's quiet Rimu room). These materials contrasted with the puzzles, clay, food, and art materials that dominated the more ordered 'activity' (or functional) spaces in the central (and more open) areas of the complex centres and the open-plan centres.

The difference in the kind and arrangement of materials in central versus peripheral spaces created a demarcation similar to Helen Woolley's (2015) description of distinct 'planned' and 'found' city spaces whereby 'planned space' was under the control of, or organised by, someone else, and 'found space' was unassigned and could be appropriated. Children's own conceptions of space in the complex centres contrasted with those in open centres and suggested that they recognised this demarcation. For example, children at the complex centres viewed the enclosed rooms independently of particular ascribed meanings or intended 'functions'. Instead of being called the 'art area', 'book area' or 'dress up area', the enclosed peripheral rooms had their own names that children always used. When asked about what spaces were 'special' or 'favourite', children in centres LC and SC referred to enclosed rooms more often than other spaces. Joe, a four-year-old boy at centre LC, said he liked the Fern room because it was "*dark*

and quiet" while Rose and Lily (four-year-old girls) explained that the Flax room was good for slumber parties because they could shut the door and make it dark (Gruffalo story, LC, 16.6.15). Although some central areas at centre LC were also named, children tended to refer to them according to their function. Naming is "one of the ways place is given meaning" (Cresswell, 2015, p. 139) and children's tendencies to use names of *peripheral rooms* seemed to imbue them with a sense of being 'unassigned' for particular functions and therefore as places of potential, or freedom.

Spatial maps showed that teachers in the complex centres (possibly unconsciously) also contributed to this demarcation by positioning themselves in central, open areas more often than in enclosed (peripheral) rooms *even when* the number of teachers available made it possible for them to situate themselves in both peripheral and central spaces. At centre LC, teachers' seeming avoidance of peripheral areas may have been an intentional response to their view of these areas as "kind of owned more by the kids than the adults" (Angie, Field notes, LC, 22.6.15). However, another teacher, Mary commented that "I don't hang out in [the Flax] room. I just find that it has a different feeling to it than the rest of LC, it's too separate… so far away from everybody else" (Mary, Focus group, LC, 21.7.15). Mary's comment suggested that teachers may also have avoided peripheral rooms because they valued being near other adults. At centre SC, the teachers' reasons for locating themselves in the main room were more pragmatic. As with teachers at centre LC, they felt that children should be allowed some privacy in enclosed spaces and viewed children as capable; however they also recognised that, because there were fewer teachers (and children) overall, they *couldn't* locate themselves in all areas at once. As Karey's comment about the tension between supervision and privacy earlier in this chapter suggested, teachers tended to situate themselves in the 'main room'.

Finally, as I indicated earlier in this chapter, the availability of 'unassigned' space, children's opportunities to transform space, and the provision of an orderly environment were also influenced by centre size and the associated *density* of people and materials.

Size matters

In addition to navigating tensions by creating rules and structuring space and time (also see Chapter 5), teachers in my study acted as 'curators' in order to balance the range of materials in the space available. Teachers found this role more challenging in the smaller centres than in the larger centres. The smaller centres had a higher density of children per m^2. Additionally, because the overall size was also small, they had the potential for a higher density of materials. Teachers at the smaller centres needed to structure the material environment and regulate children's spatial practices so as to minimise feelings of crowding (of people and materials). For example, centre SO's Tulip room could not accommodate a couch and the dramatic play, book, block, and art area at the same time. Teachers valued each of these areas and managed the space constraints by relegating some functional spaces to the outdoors. Maree explained, "The family corner and the block corner are always out here (on verandah) but sometimes we swap them over just for something different but we don't have space for both to be inside at once" (FG, SO, 14.12.15). Teachers in the Tulip room prioritised situating the (highly used) couch inside instead of outside where it would be unavailable in poor weather. The couch accommodated several children and adults; however, the space it occupied contributed to the teachers' decision to relegate the dramatic play area to the outdoors. In contrast, the Freesia room's couch was 'child-sized' and only accommodated one adult and two children. I regularly observed children listening to stories in the Freesia room while standing because there was no room for them to sit on the couch. Centre SC had a similar problem in relation to space and could not fit a couch indoors at all.

> Emma: We used to have a couch...
>
> Karey: We moved that couch around and around and around.
>
> Ann: And what was the problem, why is that not there now?
>
> Hillary: The two-seater... was really nice but just physically it took up a lot of floor space and because of the way [the space] is laid out in the 3 separate areas, in each room the floor space is so small...
>
> Karey: It's amazing how one double couch limited the space, it took a lot of space which is ridiculous I know – but it really did. (FG, SC, 2.9.15)

In contrast, both of the large centres had at least one large, comfortable couch that children variously sat on, leaned across or against, or lay on alone or with friends. At centre LC, three-year-old Ani watched a story while "...kind of hanging off the side of the couch ...constantly moving up and down from the arm of the couch ...most of the time while still holding her handbag" (Observation, LC, 18.6.15). At the time I reflected "It's interesting to see how physical she is. She is using the couch like a 'landscape' (Torelli & Durrett, nd) to go over and around – all the while watching the story" (Field notes, LC, 18.6.15).

The examples above show that the need to prioritise particular material items over others was influenced by centre size and small size constrained the use of some furniture and materials. At the same time, the argument that a certain range of materials can be linked to the quality of children's experiences is problematic because quality needs to be assessed in relation to the specific community's cultural context and aspirations for children (Moss & Pence, 1994). However, in these examples, the material items (such as the couch and dramatic play areas) were valued by teachers and children (also see Chapter 5) and consequently, small spaces can be seen as having narrowed the children's opportunities to access a valued (and varied) range of materials potentially limited the quality of children's lived experiences.

Finally, as I explained in Chapter 5, 'potential', or empty space (Kritchevsky & Prescott, 1969) is an important aspect of flexibility that permits children to act on space and to create new spaces. Polymorphic space can sometimes fulfil the function of potential space because it "can sustain alternative uses by the children even in the presence of the dominant use" (Jones, 2000, p. 37). In Chapter 5, I used an example in which Eli and Duncan appropriated polymorphic space in the small centre (SC) to create marble races to illustrate how children could learn to appropriate such space for their own interests (see Figure 5.4). Teachers in the two smaller centres were also creative in their role as curators. For example, while centre SO's Freesia room had a child-sized couch, teachers at centre SC's solution was a large, stable old chair that enabled children to use it as a landscape whereby several children could climb on and over it at one time.

However, the tension teachers experienced in their curatorial role placed significant constraints on the professional agency they had to respond to children's interests through materials or to support children to exercise agency when transforming space. This was because, as well as impacting on the type and quantity of materials, the size of physical space in each centre impacted on children's ability to spread materials and to transform space. The small centres tended to have less unassigned space, even after teachers had made curatorial decisions. This meant that teachers also needed to take a more proactive role in regulating children's use of space. As three teachers explained:

> Chrissie: Like today they moved the family corner over into the locker area and wanted to use that area by the lockers and by the door... [which obstructed the entrance and locker area].
>
> Jo: because I think what they're trying to say to us is 'this area is too small, it's too small for us to work in' … and when you get more than three children in that little area (the dramatic play area) it becomes rather …
>
> Maree: You're trying to fit all the areas in a really small space. So you have a small book area and a small family area and a small block area, so you can have all those areas but not in a substantial way. (FG, SO, 14.12.15)

And later,

> Jo: A number of them are doing these amazing block creations but because the room's so small … it comes to [rest time] …and we don't want to take it down so it's really hard then to say 'well we've got rest time, but it's okay' - it won't be so okay…
>
> Rachel: But then we've got 30 children to lay down [for sleep or rest] so… (FG, SO, 14.12.15)

Another dynamic that teachers' curatorial role had to take into account was the degree to which children's transformation of space impacted on other children. This was influenced by temporality and space since the number of children inside which fluctuated during the day, especially due to weather. Children's sensitivity to these rhythms and their ability to sometimes work around them was discussed in Chapter 5 and has similarities to Skånfors et al.'s (2009) findings that children withdrew socially more often when the centre was busy. However, as I discussed in Chapter 6, tensions were exacerbated when there were more children inside, particularly when their play

interests or rhythms conflicted. To this extent, the impact of small spaces was, in part, weather dependent.

In summary, tensions between children's transformation of space and the provision of a varied and orderly (legible) environment were influenced by the size and configuration of activity space in complex and nuanced ways. Teachers in the two open-plan centres created order by dividing spaces through furniture arrangement and, while they responded to children's interests as part of this spatial structuring, teachers controlled the balance of power between individual and collective interests by protecting collective interests – particularly when space was small. In contrast, the enclosed architecture of peripheral rooms in complex centres seemed to provide sufficient spatial definition to enable a degree of 'contained disorder'. Unlike the central areas of complex centres and space in the open-plan centres, peripheral rooms were dominated by open-ended materials. When layered together with other affordances (such as: the opportunity to make them dark; restrict noise transfer; and to remain out of sight) peripheral rooms seemed to be conceptualised as spaces of freedom by children and teachers. Further, children's tendency to name peripheral rooms (rather than refer to them according to particular assigned activities) and teachers' tendencies to spend less time in peripheral rooms compared to central areas contributed to a demarcation between peripheral and central spaces. This spatial demarcation afforded children and teachers more opportunities to exercise agency in the complex centres when compared to the open-plan centres. Finally, the size of activity space (perceived space) also contributed to the production of social space by constraining children and teachers' agency. Teachers in the two centres with the smallest activity space (SC and SO) experienced tensions in their curatorial role and this stretched their creativity and placed significant constraints on their professional agency and on the richness of children's lived experiences.
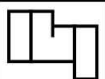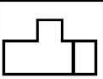
Implications for teachers' professional agency

My research's second sub-question asked about how teachers' conceptions of space influenced children's lived experiences. In this chapter, I sought to illustrate how teachers' navigation of three tensions between: (i) children's privacy and the teachers' role in supervising children and supporting their learning; (ii) children's loud exuberant

play and opportunities for quiet and calm experiences; and (iii) children's ability to transform space and the provision of varied and orderly (legible) material environments, influenced their conceptions of indoor activity space. This chapter has revealed that, in navigating these tensions, the extent of teachers' professional agency was thickened or thinned (Klocker, 2007) by the way *line-of-sight*, *noise transfer*, and *density* produced different affordances in each centre. In this thesis, I use the term 'professional agency' to mean the extent to which teachers have opportunities to apply theory through their practice.

Table 7.1 shows that, when making professional decisions, teachers' options were narrowed in the open-plan centres when compared to spatially complex centres. This was because in open-plan space unrestricted *line-of-sight*, and unrestricted *noise transfer* afforded teachers few opportunities to create spaces in which diverse noise levels, children's transformation of space and orderly space, and privacy and supervision could coexist harmoniously.

Table 7.1: Teachers' agency in navigating spatial tensions

The variety of options teachers had for:	CENTRE LC	CENTRE SC	CENTRE LO	CENTRE SO
balancing supervision and children' privacy	X	X	X	/
negotiating varied noise levels among children	X	X	/	/
balancing children's transformation of space with the provision of a varied and orderly material environment	X	X	X	/
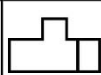
Key					
X	Many	x	Few	/	Very few

Implications for children's lived experiences

In this chapter, I have demonstrated how, in navigating tensions arising from the physical space in each centre, teachers created rules and norms that regulated children's spatial practices (Gallacher, 2005). These rules and norms influenced children's opportunities to actualise affordances and to enact the 'child-friendly'

experiences that I discussed in Chapters 5 and 6 (Tables 5.4 and 6.1). In particular, teachers' decisions to allow children to be 'out of sight' in the complex centres opened the way for children to actualise a wide range of affordances available in enclosed peripheral rooms (such as being private or engaging in exuberant play without disturbing people in other parts of the centre). In this chapter, I have identified a further five lived experiences that reflect the characteristics of 'child-friendly' environments (Chatterjee, 2005; Kennedy, 1991). Table7.2 shows that these were opportunities to: experience average background noise levels < 55 dB; explore and utilise a wide range of materials and spaces; access materials that have home-like properties such as couches; and to transform space by controlling light and noise levels; and transform space by moving furniture and materials. The extent to which children experienced these opportunities was evident in the two previous chapters, but I have included them in this chapter because their availability to children was brought to the fore through teachers' navigation of tensions and the ways the decision making that resulted contributed to the production of social space and thereby influenced children's lived experiences.

Table 7.2: Opportunities for child-friendly lived experiences in the centres, Chapter. 7

Children have opportunities indoors to:	CENTRE LC	CENTRE SC	CENTRE LO	CENTRE SO
experience average background noise levels < 55 dB	=			
explore and utilise a wide range of materials and spaces	**X**	X	**X**	X
access home-like furniture such as large couches	**X**	X	**X**	X
transform space by controlling light and noise levels	**X**	**X**		
transform space by moving furniture and materials	**X**	**X**	X	X

Key

X Usually   X Sometiems = Only in peripheral room

Conclusion

In this chapter, I have demonstrated how the spatial layout of each centre contributed to three key tensions that teachers navigated. These tensions were: children's privacy versus supervision by teachers; children's loud exuberant play versus opportunities for quiet and calm experiences; and children's transformation of space versus the provision of varied but stable material environment. Each centre's spatial layout contributed to these tensions through three aspects of perceived space: *line-of-sight*; *noise transfer*; and *density* of people and materials. How teachers navigated these tensions impacted each centre's rules and norms and, through this, on children's lived experiences. In each centre, line-of-sight; noise transfer; and density of people and materials narrowed or expanded teachers' options for navigating the tensions. I have used Lefebvre's (1991) spatial triad and Gibson's (1979) theory of affordances to observe how these tensions influenced teachers' decision making and children's lived space.

When negotiating tensions between privacy and supervision, the options available to teachers in open-plan physical (perceived) space were narrowed by the close alignment of the physical space (and unobstructed line-of-sight) with the concept of surveillance (conceived space). These environments afforded teachers fewer options (beyond moveable equipment) for supporting children's privacy or employing a range of supervision practices, when compared to the affordances available to teachers in the complex centres. Teachers in the complex centres were unable to easily see into peripheral rooms, and this afforded them the option of choosing to use supervision practices that shared power with children. These decisions were crucial in opening the way for children in complex centres to actualise the affordances available in enclosed rooms, such as those arising from restricted noise transfer.

The degree of noise transfer in each centre influenced the range of options available to teachers when negotiating tensions between children's loud exuberant play and the availability of quiet and calm experiences. Children in the open-plan centres experienced higher average decibel levels (L_{Aeq}) than those in the two complex centres since in open-plan centres noise transferred across space more readily. Teachers in the two open-plan centres had no option but to respond by creating rules and norms that

positioned the entire indoor space as 'quiet space' and this was particularly influential in how teachers choreographed group routines such as sleep and rest. This approach, reflecting a dominant discourse of 'being a member of a collective' (Markström & Halldén, 2009), constrained children's opportunities to be exuberant or loud. In contrast, restricted noise transfer in the complex centres enabled different noise levels to coexist harmoniously and this afforded teachers more options for responding to tension between individual and collective interests. Teachers in the complex centres responded by allowing children to play exuberantly and noisily in some peripheral rooms, although the extent to which noise was contained was moderated by small size.

In navigating tensions between children's practice of transforming space and the provision of varied and orderly material environments, this chapter has demonstrated how complex centres afforded children more opportunities to transform space when compared to the open-plan centres. Teachers in the open-plan centres structured spaces to create legible functional areas. Although sometimes allowing children to transform these areas, teachers' representations tended to dominate conceived space (Lefebvre, 1991) in the open-plan centres and in the central areas of the complex centres. In contrast, the semi-enclosed architecture of peripheral rooms (perceived space) minimised the extent to which materials encroached on other areas and afforded a degree of 'contained disorder' that, when combined with minimal noise transfer and visual distraction to and from other areas, enabled children to transform space with limited impact on other functional areas of activity. Further, a clear demarcation between the central and peripheral spaces in the complex centre, whereby central spaces tended to be structured by teachers while peripheral spaces were more open to children's appropriation and representation, enabled the production of more diverse social spaces in the complex centres.

Finally, this chapter has demonstrated how teachers' options in their role as curators of materials were narrowed or expanded by the size of physical space. In my study, teachers' opportunities to negotiate with children, for example about how children 'spread materials' across space, were constrained in smaller spaces. Teachers needed to choose between, for example, accommodating dramatic play materials versus couches indoors and this narrowed their options for responding to children's interests and

practices. Small spaces clearly constrained children's access to a range of materials and this impacted on the quality of their lived experiences Finally, creating 'potential' space (Kritchevsky & Prescott, 1969) was more challenging in the smaller centres because they tended to have less unassigned space, even after teachers had made curatorial decisions, and this constrained children's opportunities to transform space by spreading materials.

Chapter 8

DISCUSSION

"A person's a person, no matter how small"
Dr. Seuss, Horton Hears a Who!

My research set out to answer the question: What is the relationship between the size and spatial configuration of all-day ECE centres' indoor activity spaces[25] and children's lived experiences? My findings reveal that the materiality of space matters for children's lived experiences as well as for teachers. In each of the four spatially diverse ECE centres in my study, space impacted on children's lived experiences both directly and indirectly. Space impacted directly on lived experiences through its constraints and affordances (Gibson, 1979). For example, unrestricted visibility in open plan space enabled children to easily see friends and notice other 'goings-on'. Space impacted on children's lived experiences indirectly through the socio-spatial interplay of physical space (and its affordances) and people's representations of space through centre rules and norms.

While a "globalised culture of audit" (Denzin, 2009, p. 139) may wish for this thesis to provide a single answer in the form of a 'design recipe' for ECE centre built environments, my research instead contributes to nuanced and complex understandings of space that take account of people. The bricolage of research strategies that I used enabled me to identify complex socio-spatial interactions and reveal how they influenced children's lived experiences in the four ECE centres. The interplay of children's development, conceptualisations of children and childhood, teachers' and children's agency, and the physical aspects of space contributed to the opportunities children had for rich lived experiences. Consequently, in this chapter I discuss a spectrum of possibilities that could exist in the relationship between the size and spatial configuration of ECE centre indoor activity space and young children's lived experiences. This approach indicates that there are changeable and variable propositions that can be considered in the design of ECE centre built environments; this

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25 As defined by New Zealand's Education (Early Childhood Services) Regulations 2008.

is consistent with Massey's (2005) view of space as being dynamic and open to multiple possibilities.

An important spatial distinction, from which different affordances arose in my research, was the availability of peripheral rooms in complex centres and their absence in open-plan centres. Peripheral rooms were of interest because the ways children used these different spaces illustrated the spatialized aspects of agency, age, mobility, relationships, play, sleep and rest that related to this project particularly well. In this chapter, I begin by examining these spatial differences across Chapters 5-7 thus integrating my findings about the variability of children's lived experiences in the four spatially diverse centres, and how this variability contributed to children's and teachers' agency. I then explain how the interplay of physical space and children's and teachers' representations of space and actions contributed to the production of the social space through which children's lived experiences occurred. This chapter concludes by drawing together key findings followed by identifying research contributions, limitations, and avenues for further research.

What were children's lived experiences in the four spatially diverse centres?

In Chapters 5 – 7, I examined children's group and individual rhythms, mobility and social interactions, and teachers' navigation of spatial tensions that arose in each centre. I examined the children's experiences that emerged through my observational, participatory and technical research strategies by aligning them with Kennedy's (1991) characteristics of child-friendly spaces (see Figure 2.1). This process led me to a set of child-friendly (rich) lived experiences that children in each centre had more or fewer opportunities to experience. In this way, I have developed a set of observable, empirical attributes that operationalise Kennedy's more abstract concepts.

In Table 8.1, I have collated these lived experiences into related groups derived from Kennedy's (1991) characteristics (see Figure 2.1). For example, Kennedy (1991) describes 'habitable spaces' as offering emotional shelter, privacy and intimacy, freedom of movement, territoriality, empowerment, and places for personal wellbeing, such as eating and sleeping. Table 8.1 shows the extent to which children had the opportunity to experience these characteristics in each centre by outlining 11 aspects of this habitable

category that I observed (see coloured section). I also do this for Kennedy's 'transformable' (spaces of unfinished character) and 'varied' characteristics.

Kennedy (1991) describes transformable environments as offering accessibility, choice, autonomy, and opportunities for negotiation that enable children to engage and interact with space and to "leave their mark on the world" by transforming their environment through personal initiative (p. 44). Although Kennedy grouped these characteristics under the umbrella term 'unfinished character', I have used the broader term 'transformable' to better reflect my finding that children's opportunities to act on space were afforded, not only by the unfinished character of a space, but also by its ability to be transformed by children with minimal impact on other parts of an activity space. Finally, Kennedy describes 'varied spaces' as offering *balance* among the spaces of attachment, seclusion, quiet, engagement, unfinished character and so on. I have numbered the opportunities for child-friendly lived experiences for reference (numbers 1-17, Table 8.1).

Table 8.1: Opportunities for child-friendly (rich) lived experiences in the centres

		Children have opportunities indoors to:	CENTRE LC	CENTRE SC	CENTRE LO	CENTRE SO
Transformable	1	transform space by controlling light and noise levels	X	X		
	2	transform space by moving furniture and materials	X	X	X	X
	3	appropriate potential space for their own purposes	X	X	X	X
	4	collaborate with peers while 'on the move' (two-year-olds)			X	X
Habitable	5	sleep undisturbed	X	X	X	~
	6	freely access 'activity space' while others sleep	X	x#		X**
	7	choose sleep times	X			~
	8	find private space alone or with a friend	X	X		
	9	experience average background noise levels < 55 dB	=			
	10	easily find adults	X	X	X	X
	11	notice goings-on in other freely accessible spaces	X	X	X	X
	12	access home-like furniture such as large couches	X	X	X	X
Varied	13	find quiet spaces to rest at any time	X	X	X	
	14	play without regularly defending interactive social space	X	X	X	
	15	play without noise restriction while others sleep	X	X	+	**
	16	explore and utilise a wide range of materials and spaces	X	X	X	X
Transformable	17	engage in noisy or exuberant play without disturbing others	X	X	X	

Key

X	Usually	+	Only occurred in outdoor room (not included in indoor m²)
X	Sometimes		
~	Two-year-olds only (in separate sleep room)	#	Dependant on whether one or both peripheral rooms are used for sleeping
=	Only in peripheral room	☐	Opportunity not obvious or present
**	Regularly woken by noise (Tulip room)		

In the four centres, most of the opportunities for child-friendly (rich) lived experiences were influenced by the extent to which diverse rhythms and activity could coexist

harmoniously. Spatial complexity was particularly enabling in this regard (see Chapter 5). For example, Table 8.1 shows that, by comparison to children in the open-plan centres, children in the spatially *complex centres* who had routine sleeps (habitable) tended to have more opportunities to choose the timing of their sleep and to experience undisturbed sleep (Table 8.1: # 5 & 7) at the same time as other children in the centre had opportunities to participate in activities with few restrictions on their noise levels or mobility (varied) (Table 8.1: # 15 & 6). Additionally, children in *complex centres* tended to have more opportunities to experience privacy (habitable), quiet spaces (habitable and varied), and to engage in exuberant or loud play without impacting on others (varied) (Table 8.1: # 8, 13, 9, 17). They could also more easily transform space by controlling light and noise levels, and by moving furniture and materials (transformable) (Table 8.1: # 1, 2). Opportunities to engage in noisy and exuberant play without disturbing others (varied) contributed to these children's opportunities to transform space. Finally, older children in *complex centres* had more opportunities to play for prolonged periods without defending their interactive social space from interference (habitable and varied) than children in the open-plan centres did, although these opportunities were mitigated by size (Table 8.1: # 14). In contrast, older children in *open-plan centres* had to work harder to engage in uninterrupted play or to limit the number of children in a group, particularly in the smaller open-plan centre (SO) (Table 8.1: # 14).

The size of each centre's activity space added a layer of dynamics to spatiality by narrowing or expanding the opportunities offered by openness or complexity. In other words, small size constrained the harmonious coexistence of diverse rhythms and activities, and large size expanded it. Further, Table 8.1 shows that, in both the *open-plan and complex centres*, small size constrained children's opportunities to: explore and utilise a wide range of materials and spaces (varied); access large home-like materials such as couches (habitable) and; to appropriate potential space for their own purposes (transformable) (Table 8.1: # 16, 2, 3). The interaction between spatial complexity and size meant that children in the centre that was both *small and open-plan* (SO, Freesia) had the fewest options for experiencing the full range of rich lived experiences I have described (# 1-17). Further, as teachers sought to respond to the spatial constraints of small open-plan space, some older children in this small open-

plan context were obliged to experience collective sleep and rest routines (habitable) that were 'out of sync' with their cyclical rhythms (Lefebvre, 2004). I return to the idea of collective practices later in this chapter (see Figure 8.2).

However, in my research the *open-plan centres* afforded some opportunities for rich relational lived experiences that were constrained in the complex centres. For example, children in the two *open-plan centres* tended to have more opportunities to easily find adults and friends (habitable), and to notice goings-on elsewhere in the indoor activity space (Table 8.1: # 10 & 11). Additionally, and unexpectedly, my research found that younger children in the *open-plan centres* had significantly more opportunities to collaborate with peers (habitable) than younger children in the complex centres (Table 8.1# 4). The increased opportunity for collaborative play among younger children in the *open-plan centres* enabled them to 'lead' their own play and to work together to appropriate, or act on, space (transformable). This opportunity to exert power and to act with agency contrasted with younger children's experiences in the *complex centres* where older children's play scripts tended to dominate social space (see Chapter 6).

As I discussed in Chapter 1, agency arises within the complex relationship between adults, children, and the material world (Alderson, 2001; James, 2000) and, while structures such as age and socio-cultural factors can constrain people's agency, in this thesis I have argued that space can also influence agency. As a result of the "… 'layering' or 'eroding' effects of a multiplicity of factors" (Klocker, 2007, p. 85) (including spatial factors) Table 8.1 has illustrated that children in each centre experienced "varying … capacities for voluntary and willed action" (p. 85). This is because their actions were carried out in more or less restrictive spatial contexts that 'thickened or thinned' (Klocker, 2007) children's opportunities to meet their own needs and to contribute to the production of social space. Figure 8.1 (below) illustrates that, when opportunities are layered together, spatial complexity thickened (particularly older) children's agency and spatial openness thinned it – in Klocker's terms. Furthermore, since small size narrowed the possibilities afforded by complexity, and large size reduced the limitations of open-plan space, Figure 8.1 shows a number of continua for how the size and configuration of physical space impacted on children's agency – a key aspect of their lived experiences. Figure 8.1 illustrates that greater spatial complexity (horizontal

Figure 8.1: Impact of size and complexity on child and teacher agency
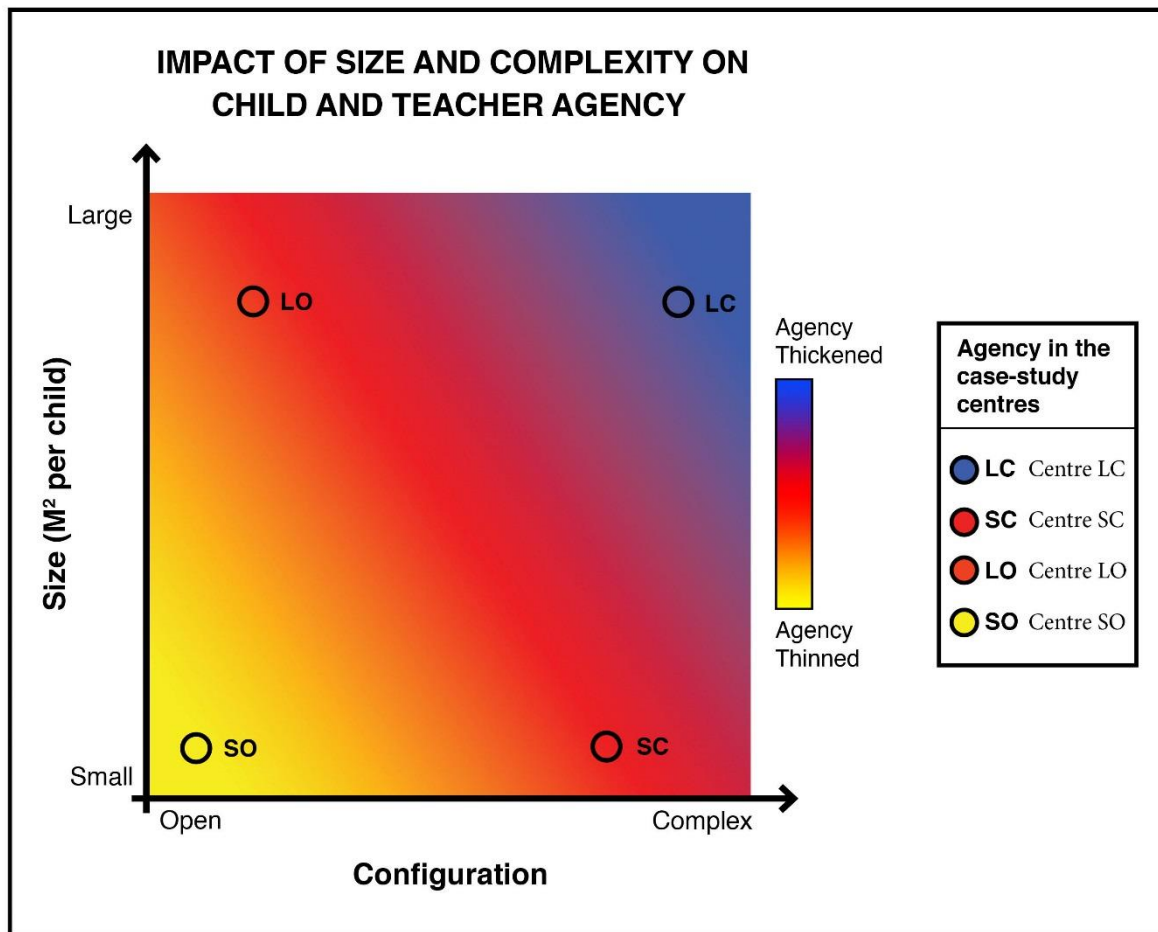
axis) was associated with thickened agency (centres LC and SC), however this was mitigated by size (vertical axis). Similarly, a more open-plan configuration (horizontal axis) was associated with thinned agency (centres LO and SO), however this effect was mitigated by increased size (vertical axis).

In the following section, I explain how size and configuration of physical space worked together to enable and constrain the children's opportunities for rich lived experiences in the centres. In particular, I focus on explaining how the social-material interplay, that is the *interplay* of physical space (perceived space) and rules and norms created by children's and teachers' representations of space (conceived space), contributed to the production of social space in each centre, and how this provided conditions through which children's lived experiences occurred (lived space).

How was social space produced in the centres?

A social-material interplay of people and physical space

Although Lefebvre's (1991) dimensions of space are inter-related and work simultaneously, affordances that provided opportunities for the rich lived experiences discussed in Table 8.1 arose from the interplay of *perceived* and *conceived* space in particular. I use perceived space as an entry point from which to consider this interplay.

Perceived space produced spatial affordances

In my research, three aspects of *perceived* space produced affordances that particularly impacted on the interplay of perceived and conceived space. These aspects were: line-of-sight; noise transfer; and the density of people and materials. In Figure 8.2, I have used a sliding scale to compare the four centres' spatial layout against these three aspects and arrive at a spectrum of restricted / unrestricted spatial affordances leading to more or less diverse or collective social space.

Figure 8.2 illustrates that, in the two complex centres (centres LC and SC), line-of-sight and noise transfer were more restricted and density was mitigated when compared to the open-plan centres and that size moderated these effects. These differences arose from the ways that architectural barriers (such as the full-height walls found in the complex centres) restricted lines-of-sight and noise transfer, and the ways that they influenced patterns of space use, including the distribution of materials. When considering the children's lived experiences (see Table 8.1), these spatial restrictions clearly contributed to the production of more *diverse* social space. By diverse space, I mean space that enables heterogeneous experiences and rhythms to coexist harmoniously. For example, *restricted* line-of-sight afforded children opportunities to play without distraction from other areas, while *restricted* noise transfer enabled children to find quiet spaces or to engage in exuberant and quiet activity without disturbing others. The semi-enclosed architecture (perceived space) of peripheral rooms also mitigated the extent to which people and materials in these rooms encroached on other areas and afforded children opportunities to transform space by moving equipment, pulling curtains to darken rooms and so on without disrupting activity elsewhere. Consistent with previous research in adult settings, the architectural

Figure 8.4: Interplay of the spatially diverse centres and three aspects of perceived space

	Line-of-sight		Noise transfer		Density			Social space	
	Restricted	Unrestricted	Restricted	Unrestricted	Mitigated	Unmitigated		Diverse	Collective
CENTRE LC	◀●———▶		◀●———▶		◀●———▶			◀●———▶	
CENTRE SC	◀——●——▶		◀——●——▶		◀——●——▶			◀——●——▶	
CENTRE LO	◀——●——▶		◀——●——▶		◀——●——▶			◀——●——▶	
CENTRE SO	◀———●▶		◀———●▶		◀———●▶			◀———●▶	

separation of these rooms also helped to mitigate the effects of crowding by influencing patterns of space use (Baum & Davis, 1980; Evans et al., 1996).

Figure 8.2 further illustrates that, by contrast, in the two open-plan centres *unrestricted* line-of-sight and *unrestricted* noise transfer contributed to the production of more *collective* social space. By collective space, I mean space in which more homogenous (collective) experiences occur because heterogeneous experiences and rhythms may conflict when occurring at the same time. For example, since *unrestricted* noise transfer and *unrestricted* lines-of-sight meant that play was visible (and audible) to others in the room, children in open-plan centres tended to experience higher noise levels (see Table 5.1, Chapter 5) and fewer opportunities to find quiet space and privacy than those in the complex centres (see Table 8.1). These constraints diminished children's ability to respond to their own individual needs for privacy or quiet. Additionally, older children had to work harder in the open-plan centres to protect their interactive space or to limit the number in a group, particularly in the smaller centre. Finally, children's opportunities to create diverse spaces by changing lighting levels or creating diverse noise levels were constrained in *collective* social space and these constraints diminished (particularly older) children's ability to contribute to the production of social space by 'acting on' space.

From this discussion it could appear that physical space (perceived space) predominantly impacted on children's lived experiences *directly*, however I sought to examine how the dimensions of Lefebvre's (1991) triad influenced each other over time and, in particular, how the interplay between perceived and conceived space created a continuum of possibilities for social space. I explore this interplay in the following section.

The interplay of conceived space and spatial affordances

The rules and norms (conceived space) that governed children's spatial practices arose from children and teachers, whose decisions and actions were both enabled or constrained by spatial affordances. As I have discussed in the previous section, affordances arose from the size and configuration of each centre's activity space (perceived space). However, these affordances were not the sole determinants of children's and teachers' actions. In my research, teachers' beliefs, dispositions and actions contributed to the conceived space far more than I originally imagined. I begin by discussing these.

Teachers constantly made choices that required them to navigate tensions arising from spatial affordances (such as children being hidden from immediate view) or from spatial constraints (such as the small size of some spaces). This meant that teachers' decisions were always navigated. Teachers made decisions about spatial aspects of centre life through their roles as *choreographers* (Haldrup & Larsen, 2006) of the rhythms and movement patterns that characterised centre life, and as *curators* of the materials within the activity space.

In these roles, teachers navigated tensions arising from the social-material interplay of people and the affordances of the three aspects of perceived space discussed in the previous section: line-of-sight, noise transfer, and density (see Figure 8.2). Tensions that arose from this interplay were: children's desire for privacy versus the need for supervision by teachers; children's desire for loud exuberant play versus opportunities for quiet and calm experiences; and teachers' wish to facilitate children's transformation of space versus the provision of varied but stable and legible material environment. The ways teachers navigated these tensions influenced the decisions they made. For

example, in their role as choreographers teachers in the *complex centres* chose to allow children access hidden spaces despite the constraints this placed on their ability to 'supervise'. Similarly, teachers in the *open-plan centres* responded to high levels of noise transfer by creating rules and norms that positioned the entire indoor space as 'quiet space' to protect the interests of the collective group of children.

As they navigated these tensions towards a decision, teachers in each centre (as with children) experienced "varying … capacity for voluntary and willed action" (Klocker, 2007, p. 85) depending on each centre's more-or-less restrictive spatial context. Table 7.2 shows that teachers' options for navigating the three key tensions were narrowed or expanded by each centre's physical space. In the *complex centres*, teachers had more options for negotiating rules and norms because more affordances were available in the spatially complex environments. For example, teachers in the two *complex centres* resisted government guidelines about surveillance as they navigated tensions between supervision and children's privacy. This resulted in a decision not to restrict children's mobility that, in turn, 'released' a wider range of (otherwise unavailable) affordances to both teachers and children in the *complex centres*. Similarly, because noise transfer (perceived space) was restricted in the two *complex centres*, teachers had many options when making decisions about the rules and norms that governed children's noise levels when playing indoors.

The wider range of options available (and utilised) in the *complex centres* enabled the interplay between perceived and conceived space to involve a greater level of negotiation among people. For example, teachers' decisions to let children occupy peripheral rooms (conceived space) in turn influenced patterns of movement, groupings, noise, and visibility (perceived space). Teachers and children had opportunities to negotiate (and renegotiate) these patterns as part of the ongoing process of the production of social space. In contrast, in the *open-plan centres* the interplay between perceived and conceived space tended to be dominated by perceived space. For example, in the *open-plan centres* the close alignment of open-plan physical space (perceived space) with the concept of surveillance (conceived space) meant that perceived space dominated the ways that teachers (and children) were able to represent space. For example, they could not easily choose to represent a particular space as being

a space of privacy. The dominance of perceived space constrained people's opportunities to negotiate the production of diverse (and changing) social spaces over time. Consequently, teachers had few options for creating rules and a culture that balanced children's privacy with supervision, particularly when the space was small. Similarly, the impact of noise transfer in the *open-plan centres* narrowed the options that teachers had to balance children's desire for loud exuberant play versus opportunities for quiet and calm experiences.

Consequently, teachers in the *open-plan centres* tended to create rules and norms (conceived space) that positioned the entire indoor space as 'quiet space' in order to protect collective interests – reflecting a dominant discourse of children being members of a collective (Markström & Halldén, 2009). Furthermore, the focus on collective interests in the *open-plan centres* was particularly influential on teachers' roles as choreographers of group routines (such as sleep and rest). Although teachers aimed to choreograph routines that interacted harmoniously with children's cyclical (or biological) rhythms as far as possible, teachers in the small open-plan centre had the fewest options for choreographing diverse or flexible routines, particularly in centre SO's Freesia room where there was no possibility for separated sleep space. Here, collective sleep and rest routines were 'out of sync' with some children's cyclical rhythms (Lefebvre, 2004) and created obstacles to children's individuality (Markström & Halldén, 2009).

In their role as choreographers, teachers also acted in subtle ways to structure space. For example, in the *complex centres* the teachers made a (possibly unconscious) decision to spend less time in peripheral rooms. This decision contributed to a demarcation between central and peripheral spaces that was also characterised by differences in the ways that teachers structured open-plan (central) areas to create orderly and legible environments while allowing peripheral rooms to be appropriated and dominated by children's representations. This demarcation had similarities to 'planned' and 'found' city spaces described by Woolley (2015) and to demarcations between indoor and outdoor spaces in NZ ECE centres previously described by Stephenson (2002) (see Chapter 2).

Finally, in their role as *curators* of materials (and organisers of space), teachers' decisions (conceived space) were influenced by spatial density (perceived space) in each centre. In the two smallest centres, teachers had fewer opportunities to negotiate with children (for example, about how children transformed space) than teachers did in the two larger centres. This was because, in addition to impacting on the type and quantity of materials, the size of physical space in each centre impacted on children's ability to spread materials and to transform space. The small centres tended to have less unassigned space, even after teachers had made curatorial decisions.

Having fewer opportunities to negotiate with children means that teachers also needed to take a more proactive role in structuring space and in regulating children's use of space. Thus, although the teachers in my study usually sought to share power with children in the creation of rules and norms (conceived space), the physical (perceived) space enabled or constrained their attempts to balance individual and collective interests. Furthermore, in the smallest centres, teachers experienced tensions that they were unable to navigate successfully in their curatorial role. Instead, small size placed significant constraints on their professional agency and on their ability to respond to children's interests through the provision of materials and use of space. This was particularly evident in contexts whereby a small amount of space per child (m^2 per child) was combined with a low number of children. In this context, the multiplication of m^2 *per* child produces a very small *overall amount of space*.

While thus far I have discussed teachers' roles in establishing rules and norms in each centre – children also contributed to setting rules and norms both directly and indirectly through their negotiations with teachers and other children. For example, familiarity with daily rhythms enabled some children to develop knowledge about the unspoken rules of behaviour that govern places or events (Ergler & Wood, 2013) and some children were adept at identifying gaps through which they could appropriate space to meet their own agendas. Additionally, as I have already discussed, the interplay of the wider range of affordances available in complex centres and teachers' decision making provided a context in which children tended to experience more opportunities to act with agency to represent their own interests, capabilities and (particularly for older children) friendships through their lived space. However, as Table 8.1 illustrates,

children also had more opportunities to appropriate space for their own purposes in larger centres, where the availability of potential space (Kritchevsky & Prescott, 1969) was not contingent on children 'working around' routines, as occurred when children appropriated polymorphic space (Jones, 2000) (see Chapter 5).

Children's development and their associated play interests also appeared to influence the ways in which children utilised the affordances arising from line-of-sight, noise transfer, and density. Children actualised value-rich affordances that 'stood out' to their developmental interests (Withagen et al., 2012). For example, as I discussed earlier in this chapter, in the two *open-plan centres* highly mobile two-year-olds acted with agency by utilising the unrestricted visibility to remain connected to peers while 'on the move'. This afforded younger children opportunities to modify social space through their spatial practices of journeying thus appropriating the open-plan space and assigning it a new meaning (conceived space). In this way, younger children contributed to the production of social space in which their lived space was consistent with their play interests (see Chapter 6).

In contrast, older children in *complex centres* actualised the affordances of protection and privacy that were available in enclosed peripheral rooms and assigned meaning (conceived space) to these rooms as good places for prolonged, uninterrupted social play where they could easily transform space with friends (see Chapter 6). Clearly, in this study, open-plan indoor physical space can be seen to afford more opportunities for younger children to act as social agents when contributing to the production of social space with peers, while complex physical space affords older children similar opportunities.

However, in the complex centres children of all ages utilised the opportunities to experience privacy and diverse noise levels in peripheral rooms in particular. In assigning their own meanings (conceived space) to peripheral rooms (for example, as places to be alone or to participate in quiet and intimate, or noisy and exuberant, play), children were able to contribute to the ways that diverse spaces were represented and, through this, to the production of social space in which they could exercise agency to meet some of their individual needs in relation to social interaction, noise, and privacy.

Having described how the interplay between each centre's size and configuration and the meanings assigned to space by teachers and children contributed to the production of social space, I now briefly revisit how, through this socio-spatial interplay, the size and configuration of indoor activity space impacted on children's lived experiences in the centres.

The relationship between the size and configuration of activity space and children's lived experiences

The size and configuration of physical space impacted both the children's and teachers' lived experiences through its contribution to the production of social space.

In relation to children's lived experiences, both spatial complexity and spatial openness made a difference. Spatial complexity contributed to the production of more diverse lived space in which children had opportunities to:

- physically withdraw from social interaction and experience privacy,
- transform space to suit their interests, including boisterous and quiet play,
- engage with peers for prolonged periods and protect interactive space (especially older children),
- participate in group and individual routines that were responsive to their individual rhythms, and
- contribute to the production of diverse social spaces.

Spatial openness contributed to the production of more collective social space in which children had opportunities to remain connected:
- to their peers while mobile (especially two-year-olds), and thereby appropriate space for themselves in mixed-age settings,
- to 'goings-on' elsewhere in the centre,
- to adults.

The size of each centre's activity space added a layer of dynamics to spatiality by narrowing or expanding the opportunities offered by openness or complexity. In other

words, small size constrained the harmonious coexistence of diverse rhythms and activities, and large size expanded them.

In each of the four centres, the layering together of the interplay of line-of-sight, noise transfer and density, and teachers' and children's responses to the affordances that arose from these aspects contributed to the production of more or less *diverse* or *collective* lived spaces. Balancing "the personal and the collective" (Kennedy, 1991, p. 44) means that the collective must also *allow for the individual* so that institutions do not become dominated by control, organisation and routinisation, and collective discourses to the extent that children lack privacy, intimacy, and personal choice (Kennedy, 1991; Markström & Halldén, 2009). In my research, older children in particular experienced more agency and more opportunities for richer lived experiences, through which they could meet their own needs for friendship, rest, privacy, physical expression, mobility, and personal wellbeing, when the spatial context contributed to the production of *diverse social space*.

My research suggests that large physical spaces that are both open and complex create *conditions* where children have the potential for rich experiences that include opportunities to exercise agency in relation to the production of their own lived space. These conditions also give teachers freedom to make fullest use of their professional agency. My findings suggest that, in addition to adult:child ratios, group size, and qualifications (often described as the 'iron triangle' of quality (e.g., Smith et al., 2000)), physical space is an affordance that can create the conditions for quality practices and for rich lived experiences.

Research contributions

Whilst this study had a number of limitations (see next section), it also makes a number of contributions, theoretically, conceptually and empirically. Paradigm shifts in spatial theory and childhood sociology (see Chapters 1 and 3) have opened the way for a greater recognition of people's contributions to the production of space, and for their contributions to be understood as occurring in contexts that enable and constrain particular practices (Gallacher, 2016). In examining the role that physical space plays in

the production of social space, my research has focused on the micro-geographies of children's lived experiences. At the same time, my research findings explicitly speak to "the wider processes, discourses and institutions to which these [experiences] connect" (Ansell, 2009, p. 191). My findings build on previous research about the role space plays in very young children's lives (e.g., Gallacher, 2005; Hackett, 2012; Legendre & Munchenbach, 2011; Moore, 1986; Rutanen, 2012; Vuorisaloa et al., 2015) and reveal new understandings about how the size and configuration of physical space interacted with children's everyday experiences and agency in four ECE centres. In so doing, it illuminates how space interacted with teachers' opportunities to exercise professional agency.

My research confirms that children's lives operate within "more-than-social contexts" (Hackett et al., 2015, p. 1) and that agency arises from the complex relationship between adults, children, and materials (see also Prout, 2005; Alderson, 2001). It contributes new insights about how the size and configuration of physical space can, though its interplay with the social world, thicken or thin (Klocker, 2007) the "potentials for children's agency" (Hackett et al., 2015, p. 4). In particular, I identified that tensions related to noise, visual distraction and crowding / density (people and materials) influenced the degree of spatial and temporal structuring in an ECE centres and that, despite teachers in my research seeking to share power with children, physical space enabled or constrained their opportunities to balance tensions between individual and collective interests. To this extent, the opportunities teachers had to exercise agency in each centre also served to increase children's opportunities to exercise agency.

These findings build on the work of Markström & Halldén (2009), James et al. (1998), and Lofdahl and Hagglund (2007) who have suggested that ECE centres' construction as 'social places to be together' influences the way that space and time are structured towards collective activity in them. My findings add a dimension that goes beyond the goal of collectivity and inserts an awareness of a spatial dimension that enables a broader understanding of the conditions that open the door to the flourishing of "exceptions and possibilities to question or oppose the social order" (Markström & Halldén, 2009, p. 115).

In addition, my research has built on Rutanen's (2012) finding that teachers used children's age-related skills to justify the establishment of some spatial constraints. While I found some examples of age being used to inform spatial structuring (for example, centre SO had separate spaces for older and younger children), in my study, teachers' decisions also related to children's different needs for sleep (which often overlapped with age). However, in relation to other aspects of centre life, teachers in my study were guided by a desire to share power with children within the constraints of each centre's physical space. The spatial affordances available in each centre, rather than the children's age, impacted most on the ways that teachers navigated tensions related to children's privacy, mobility, use of space, and noise levels.

My study confirms Rutanen's (2012) findings that teachers restructured space more frequently when there were signs of conflict or crowding, and confirms Gallacher (2005), Nothard et al. (2015), and Rutanen's (2012; 2017) previous findings that, when compared to play, activities with less flexible objectives (such as mealtimes) allow for less negotiation between adults and children about spatial practices. In addition, I found that complex space in which diverse rhythms and activities could harmoniously coexist allowed for more negotiation between adults and children (and among children) than open-plan and small physical space did.

My study also builds on the idea that "the material and biological are inextricably intertwined with the social and cultural" (Gallacher, 2016, p. 118) and contributes new insights about how children's development and physical space are intertwined; it also illuminates how this intertwining can affect potentials for children's agency, as well as power relations among children in mixed-age groups. Chapter 6 revealed that unrestricted line-of-sight played an unexpectedly significant role in younger children's friendships by affording them opportunities to remain visually connected to peers while 'on the move'. This, along with Hackett's work (2012, 2015), shifts the discourse on visual and spatial connections from a focus on connections between adults and very young children (Legendre & Fontaine, 1991; Legendre & Munchenbach, 2011; Musatti & Mayer, 2011), toward connections *among* those children within space.

My study confirms Gallacher's (2005) finding that children find opportunities to create space for themselves in response to rhythms that they had come to understand and predict. I also found examples of children creating space for themselves by inserting their own routines into, or around, group rhythms. In my study, while the children's routines sometimes usurped 'official' routines (as Gallacher has described), at other times children's actions appeared to be less about resistance and more about finding ways to navigate space and time to achieve their own goals.

In contributing new insights about children's use of enclosed rooms, my findings build on from those of Skånfors, Löfdahl, and Hägglund's (2009). In contrast to their findings, children in my study did not appear to use enclosed rooms more during busy periods, instead they utilised enclosed spaces throughout the day and children and teachers conceptualised these rooms as being *more than* 'retreat spaces'. Enclosed peripheral rooms were used for diverse activities including loud and exuberant or quiet and intimate play and, in affording diverse activities to coexist, these rooms increased the possibilities for children and teachers to negotiate how they represented space (conceived space). Nonetheless, teachers' agency and decision-making played a crucial role in making these affordances available to children.

The practices of the four ECE centres in my study confirm previous findings that sleep routines can be dominated by discourses about being part of a collective, and that these discourses are held in tension with curriculum goals of supporting children's autonomy (Nothard et al., 2015). This tension is also evident in New Zealand's curriculum emphasis on empowerment, and the inclusion of opportunities for children to "have agency to … make decisions and judgements on matters that relate to them" (Ministry of Education, 2017d, p. 18). My research contributes new insights about the role of physical space in teachers' spatio-temporal structuring (see Chapters 2 and 5) and the significance of teachers' actions to ease the flow and pace in often deeply constrained environments. Not all children in the centres in my study had access to a quiet space for rest or sleep and this raises serious questions about children's ability to meet their individual needs for sleep and rest, particularly in small open-plan spaces that significantly constrain the coexistence of children's diverse bodily rhythms. NZ's regulation is weak in this area and my findings suggest that it needs strengthening.

In building on previous research about the presence of controllable stressors in NZ ECE centres, such as noise and crowding, my research confirms that noise remains a serious issue in NZ ECE centres (McLaren, 2008; McLaren & Dickinson, 2003). In particular, children in the small open-plan centre in my study experienced significantly higher noise levels than those recommended by the World Health Organization (Berglund et al., 1999) and children found it difficult to find restful spaces in this centre (see Chapters 5 and 7). My research also contributes insights about teachers' responses to concerns about noise transfer in ECE centres, whereby teachers created rules and norms that represented entire indoor spaces as 'quiet' and this constrained opportunities for children to act exuberantly (see Chapter 7). Noise levels were much lower in the two complex centres' peripheral spaces than in their main areas, particularly in the larger centre (see Table 5.2 – Chapter 5) which suggests that spatial complexity and larger size are important in creating living conditions in which children have choice about their personal exposure to noise and opportunities to experience lower noise levels overall. The role of spatial configuration in affording opportunities for diverse noise levels merits further study.

Overall, my research supports the practice in some OECD countries (see Chapter 1) to include minimum standards for the overall amount of activity space in ECE centres *as well as* m² per person. This is particularly important to consider in contexts where governments seek to reduce group sizes through regulation because group size and space are clearly connected (see Chapter 2).

Finally, my research makes both theoretical and methodological contributions. My research supports Lefebvre's (2004) view that the rhythms of everyday life are entwined with the production of space. Within the four ECE centres in my study, situated rhythms were influenced by, and in turn influenced, both perceived and conceived space. My research has shown that the extent to which linear rhythms dominated children's circadian rhythms in the four centres was substantially influenced by the affordances arising from physical space and the ways those affordances enabled or constrained teachers' options for choreographing space and time.

My integration of Gibson's affordances alongside Lefebvre's framework constitutes a novel theoretical approach to studying space and has highlighted the agency and creativity of both children and teachers in their utilisation of space. This new theoretical lens has revealed how spatial affordances interacted with teachers' and children's decisions through the interplay of conceived and perceived space. Analysing the role of affordances in this interplay helped to illuminate how physical space impacted children's lived space and the extent to which teachers' and children's agency were influenced by, and played a role in, the production of social space.

Although Lefebvre's theoretical framework emphasises that the three dimensions of space are relational and work simultaneously, Lefebvre himself did not dwell on the fashion in which aspects of the triad interrelate in concrete situations (Merrifield, 2006). By using Gibson's (1979) notion of affordances I have been able to illuminate the interplay of Lefebvre's (1991) spatial triad within ECE built environments and have revealed that, in this context, the built environment (perceived space) played a significant role in shaping conceived space. In this way my work operationalised Lefebvre's abstract concepts and, similarly to Rutanen's (2014) work, provides concrete examples of how this spatial triad operated in an ECE centre. My finding suggests that Lefebvre may have underplayed the role of physical space when he argued that conceived space tended to dominate the perceived and lived aspects of space in his triad.

The bricolage of strategies I used in my study matched the complexity of data required to research socio-spatial interactions. Together, these strategies enabled me to develop a rich picture of the complex interplay between people and the physical space in each centre. My methodology comprised a number of ethnographic strategies, including observational and participatory data collection methods, as well as technical strategies. The observational strategies, including video and photos, gave me rich data about how children used space, interacted socially, and participated in centre routines over the course of entire days and weeks. The use of 'on the fly' conversations with children and teachers, and the use of focus groups helped to enrich my understandings of this data. The technical data (noise readings and spatial maps) added to the complex picture by supporting and supplementing data collected through observation, discussion and participatory strategies.

My research makes two methodological contributions. Firstly, my observations of children over time contribute to a complex spatial mapping approach (see Appendix J) which enabled me to explore a dynamic sense of space. This novel use of spatial mapping contributes a new (although time consuming) strategy for exploring children's use of space that may be useful to researchers who are collecting data alone. Secondly, my approach to bookmaking contributes a new strategy for participatory research with children that, in my study, maximised opportunities for discussions. By creating a personalised book that developed *over time* I created opportunities for engagement and re-engagement throughout the research period. This approach also offered fruitful 'low key' opportunities for discussion among small groups, pairs or with individual children.

Limitations and avenues for further research

This was a small scale study which involved a great deal of ethnographic work that aimed to obtain rich, holistic data (Punch, 2014). Since this was gained through immersion within the contexts of the four case-study centres, the data was situated rather than being generalizable across all ECE centres. However, I also attempted to sharpen the focus on spatial variation by gathering data across four ECE centres that shared other similar features, such as teacher ratios and qualifications (Yin, 2014). I have 'thickly described' the context of each centre to enable readers to judge for themselves the transferability of the conclusions that I have drawn about practices and experiences to other situations (Geertz, 1973).

In addition to size, a lack of cultural and socioeconomic diversity is a limitation of this study. Children and teachers in all four centres were mainly from NZ European backgrounds and centres were situated in relatively middle-class areas. As I explained at the start of this chapter, my findings do not present a 'design recipe' for ECE centre built environments. Instead, my research contributes to nuanced and complex understandings of space that take account of people. The interplay of children's development, conceptualisations of children and childhood, teachers' and children's agency, and the physical aspects of space contributed to the opportunities children had for rich lived experiences. Consequently, I have presented a spectrum of possibilities that could exist in the relationship between the size and spatial configuration of ECE

centre 'indoor activity space' and young children's lived experiences. My intention is that particular groups would be able to assess what these continua (and the factors that contribute to each centre's placement on them) mean in relation to their own social, cultural, or pedagogic values.

Although my qualitative research approach has limitations, its ability to provide rich data has helped me to identify *a set of observable attributes* (see Table 8.1) that are important to consider in the relationship between the size and configuration of activity space and children's lived experiences. Future studies may usefully draw on these attributes to help assess their generalizability to other ECE centres. In addition, further research to confirm, challenge, and build on insights from this exploratory, multiple case study project will contribute to a growing research base from which to inform quality centre design and regulation. In particular, further research is needed about how the configuration and size of physical space influences: (i) children's and teachers' opportunities to exercise agency; (ii) power relations among children in mixed-age settings; and (iii) children's experience of noise in ECE centres, especially in the context of a growing corporatisation of ECE centres in which small open-plan design is increasingly common.

Tensions about supervision of children in all four centres indicate the need for research that examines teachers, centre designers, and wider social values in relation to 'supervision' and children's privacy, freedom and independence. Such research would help to inform design the design of ECE centres better reflect community values and diverse pedagogical approaches.

Finally, the way that the size and configuration of the activity space in each centre enabled or constrained particular practices suggests that it is possible to create conditions that afford teachers and children greater agency in their everyday lives in ECE centres. As a result of my study, I surmise that policy implications could be considered after further research. For example, existing constraints on teachers' and children's ability to negotiate harmonious coexistence of diverse rhythms and activity could be reduced if:

- ECE centre communities identified how issues of noise and the need for supervision could be balanced and made appropriate responses. For example, full-height walls within indoor activity space could serve to restrict line-of-sight and noise transfer between areas, and the use of double glazed windows within full-height walls could help mitigate concerns about supervision while retaining the benefits of noise reduction.

- the regulated minimum amount of activity space (per child) is increased, particularly in contexts in which the group size is small. Contexts in my study, in which a small amount of activity space per child (m²) was multiplied by a small number of children (e.g., < 25), placed unacceptable constraints on children's and teachers' use of space, and on the quality of children's lived experiences; and

- *all*[26] children have access to space that is dedicated to sleep and rest.

Concluding thoughts

All four centres in my study were of high quality with excellent teachers. In each of them I observed many wonderful interactions among children and between children and teachers. Teachers were reflective about their practices and, as my findings have made clear, sought to share power with children and create spaces that were responsive to children's varied interests. However, constraints arose from the social-material interplay in each centre and, at times, this seriously constrained the richness of children's lived experiences and the opportunities for them and their teachers to exercise agency.

In NZ, building design in the NZ ECE sector is currently left to a free-market approach that operates under regulatory standards that are among the lowest in the OECD (OECD, 2011a). My research reveals that the limited size and open configuration of indoor space creates *conditions* that can significantly constrain the quality of children's lived experiences. The New Zealand government's 'hands off' approach to the ECE sector is in stark contrast to its proactive approach to the design of school buildings (Kaye, 2017; Ministry of Education, 2017a). Although some of the current shifts in the school building

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26 As opposed to only children under the age of two years, as is currently regulated in NZ.

design are questionable (e.g., Bisset, 2014), the difference in the government's approach to the school and ECE sectors suggests that ECE remains the "Cinderella" (Dalli, 1994) of the education system. This difference also raises serious questions about the value that we, as a society, place on the quality of young children's lives. All-day ECE centres are places where children live for up to 10 hours each day. Children deserve to live in spaces where they can exert some control over their lives and have opportunities to meet their own needs for friendship, rest, privacy, and physical expression because, as Horton the elephant reminds us, "a person's a person, no matter how small" (Seuss, 1954).

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APPENDICIES

Appendix A: Expression of interest letter (Management)

VICTORIA UNIVERSITY OF WELLINGTON
Te Whare Wananga o te Upoko o te Ika a Maui

EXPRESSION OF INTEREST LETTER

Research
Exploring relationships between built environments and children's lived experience

17 March, 2015

[centre name]
Attn: xxx xxx

Tēnā koe xxx

My name is Ann Pairman. I am a registered early childhood teacher and have taught in ECE centres since 1982. I am currently a PhD student at Victoria University of Wellington researching how the spatial configuration, and size of all-day ECE centres, interacts with young children's 'lived experiences' (everyday events as they are experienced by children).

The research will use a multiple case study approach, and incorporate four for five spatially diverse all-day ECE centres. I plan to spend about twelve days (during a four week period) in each centre. I would like [centre name] to consider being part of this research because I think your centre's building design will contribute rich data to this study. I hope that the research process, and study findings, will also be of interest to your community.

I would very much appreciate you reading the attached information about the research proposal. If you think you may be interested in participating in this study, please contact me and I will send you further details about the research process, and arrange to meet with you.

I realise that participation requires time and commitment. In an effort not to place any pressure on you, I will send you one reminder of this request. If I do not receive a reply to the reminder I will assume you would rather not participate at this stage.

This research has been approved by the VUW Ethics Committee (No. 21509, 12 March, 2015)

The supervisors of this research project are:

Dr Bronwyn Wood Bronwyn.wood@vuw.ac.nz Ph: 04 4639611	Professor Carmen Dalli carmen.dalli@vuw.ac.nz Ph: 04 4635168

If at any time you have any questions or concerns about this study, contact Dr. Allison Kirkman, Chair of the Victoria University of Wellington Human Ethics Committee (telephone: +64 4 463 5676; E-mail: allison.kirkman@vuw.ac.nz).
Nga mihi nui,

Appendix B: Information sheet (for participants)

My research role – working with children.

When I meet with the children I will explain why I am in the centre. Because many of the research strategies involve them as participants, I need to get to know children well and develop a level of trust. As a researcher, I will take a 'least adult role' which means that I will not intervene in disputes or manage their behavior in any way, although I will retain a 'responsible adult' stance in relation to issues of safety and will report serious incidents or disclosures to the Head Teacher.

Ability to withdraw consent.

You can withdraw your consent to participate at any stage before the data analysis is complete (30 April, 2016) without needing to give a reason or without penalty of any sort. In relation to children in particular, agreement will be continually sought, during research and beyond. This will be taken to mean that any indications (verbal or non-verbal) that children do not want to participate, for example to be observed, photographed, talked to by the researcher, or have their voices recorded, will be respected.

Data security.

All data will be stored under password on my home computer, or under password on my individual network drive at Victoria University of Wellington. Files will be destroyed 10 years after the completion of the thesis.

Please don't hesitate to contact me if you would like to discuss any aspects of this research further, or if you have any questions.

Nga mihi nui, Ann Pairman
ann.pairman@vuw.ac.nz

_____

This research has been approved by the VUW Ethics Committee (No. 21509, 12 March, 2015)

The supervisors of this research project are:

Professor Carmen Dalli carmen.dalli@vuw.ac.nz Ph: 04 4635168

Dr Bronwyn Wood Bronwyn.wood@vuw.ac.nz Ph: 04 4639611

If at any time you have any questions or concerns about this study, contact Dr. Allison Kirkman, Chair of the Victoria University of Wellington Human Ethics Committee (telephone: +64 4 463 5676;

E-mail: allison.kirkman@vuw.ac.nz).

Relationships between built environments & children's lived experiences

VICTORIA UNIVERSITY OF WELLINGTON
Te Whare Wananga o te Upoko o te Ika a Maui

Researcher: Ann Pairman

PhD Student Victoria University, Wellington

Detailed information …

This leaflet provides further detail about the research process. It outlines the strategies I plan to use for data collection and analysis, and highlights how I plan to manage the key ethical issues around the research.

Research process, data collection, & analysis.

Data collection

I plan to spend twelve days (over a four week period) in each centre. I will begin by collecting some background information by:

- reading the centre's philosophy or curriculum statement, and discussing this with the Head teacher / owner.
- analysing the most recent Ministry of Education RS7 return to get a 'snap shot' of child numbers, age range, adult:child ratios, and % of qualified teachers during a specific week.
- drawing 'to scale' floor plans (indoor and outdoor).
- taking photos (from children's and adult's eye level) of the indoor and outdoor environments.

During the first week, I will also spend time getting to know the adults and children in the centre by joining activities and talking with people. I will begin gathering information from children and teachers by:

- inviting children to lead me on "centre tours" to provide them an opportunity to show and describe spaces from their perspective.
- observing children (at times they agree to it).
- talking with children, either singly or in groups, as it happens within the flow of the day, and only with their agreement.
- giving children the opportunity to take photographs or to make drawings of places in the centre as a way of identifying areas that have significance for them. Some of these may be in response to specific requests, such as "can you show me where you like to be when you want to be with just one friend… [or]…what other places can you see when you're in the block area" and so on.
- taking photographs, and occasional video, of children and/or teachers in the physical environment.
- using photographs (taken by children, teachers, or myself) and children's drawings as prompts for conversations with children (at times that

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they agree), and as prompts for making maps of the centre and an 'e story-book' with children who choose to be involved.

- holding two teacher 'focus groups' to discuss teacher's perspectives about the physical environment and how they think it may influence children's experiences.
- observing teachers use of space and asking teachers questions about practices I observe.
- at times using a digital recorder to record children's conversations with each other (for example, as they play, draw pictures, and make maps or books), or as they converse with me or with other adults. The digital recorder may also be used to record conversations I have with teachers, including the focus group meetings.
- measuring noise levels in various parts of the physical environment.

Data analysis

The data I gather will be sorted and managed using a software package for qualitative data analysis. This will help me to code the data and search for underlying patterns or themes.

Ethical issues.

Informed consent.

Before asking you to consent to participate, or for your child to participate, I will arrange separate meetings with staff and parents. These meetings will provide an opportunity to discuss the research further and for me to answer any of your questions. Please also feel free to email me any questions. Consent forms are attached to this leaflet.

Use of the information.

The information gathered will only be used for reporting this research project in my thesis, in conference presentations, in teaching sessions related to this topic, and in published academic papers. You can request summary feedback about the findings of this research (see consent form).

Privacy.

The identity of the centre and participants will remain confidential, and pseudonyms will be used in my thesis, in conference and teaching presentations, and in any published papers.

PTO

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Appendix C: Teacher consent form

VICTORIA UNIVERSITY OF WELLINGTON
Te Whare Wananga o te Upoko o te Ika a Maui

CONSENT TO PARTICIPATE IN RESEARCH (Teachers)

Research: exploring relationships between built environments and children's lived experience
Researcher: Ann Pairman, PhD student, Faculty of Education, Victoria University of Wellington

By signing this consent form I agree that:

- I have been given and understand the information about this research project.
- I have had an opportunity to ask questions and have them answered to my satisfaction.
- I consent to taking part in a focus group interview and to the interview being audio recorded and transcribed. I understand I will have an opportunity to review the interview transcription.
- I consent to the researcher conversing with me about my teaching practice and children's experiences during the 'flow of the day', at times that suit me.
- I understand that I can request copies of all information gathered that relates to me.
- I understand that I can request summary feedback about the findings of this research (see below)
- I understand that the information gathered will be used only for reporting this research project in the thesis, in conference presentations, in teaching sessions relating to this topic, and in published academic papers.
- I understand that the identity of the centre and participants will remain confidential, and that pseudonyms will be used in the thesis, in conference and teaching presentations, and in any published papers.
- I understand that I can withdraw from the research at any stage before data analysis is completed (30 April, 2016) without needing to give a reason or without penalty of any sort.

- I understand that all the data gathered will be destroyed within ten years of the thesis being presented.

I consent to participating in this research.	Yes / No

I consent to the use of visual images of me being published as part of the final thesis or in journal articles, or used in presentations. Note: *If you do not consent I will ensure that only images that obscure your identify (or do not include you) are used in publications or presentations.*	Yes / No (circle)

I would like to receive summary feedback on the findings of this research.	Yes / No

Signed _____

Date_____

Name_____

Email

Appendix D: Parent consent forms

VICTORIA UNIVERSITY OF WELLINGTON
Te Whare Wananga o te Upoko o te Ika a Maui

CONSENT TO PARTICIPATE IN RESEARCH (Parents/Guardians)

Research: exploring relationships between built environments and children's lived experience

Researcher: Ann Pairman, PhD student, Faculty of Education, Victoria University of Wellington

By signing this consent form I agree that:

- I have been given and understand the information about this research project.
- I have had an opportunity to ask questions and have them answered to my satisfaction.
- I understand that I can request summary feedback about the findings of this research (see below).
- I understand that the information gathered will be used only for reporting this research project in the thesis, in conference presentations, in teaching sessions relating to this topic, and in published academic papers.
- I understand that the identity of the centre and participants will remain confidential, and that pseudonyms will be used in the thesis, in conference and teaching presentations, and in any published papers.
- I understand that I can ask for my child to withdraw from the research at any stage before data analysis is completed (30 April, 2016) without needing to give a reason or without penalty of any sort.
- I understand that all the data gathered will be destroyed within ten years of the thesis being presented.

I consent to my child(ren): [Child's name _____] [Child's name _____] participating in this research	Yes / No (circle)
I consent to the use of visual images of my child being published as part of the final thesis or in journal articles, or used in presentations. Note: *If you do not consent I will ensure that only images that obscure your child's identify (or do not include your child) are used in publications or presentations.*	Yes / No
I would like to receive summary feedback on the findings of this research.	Yes / No

Signed _____   Date_____   Name_____ (parent/guardian)   Email _____   (email optional, in case you are no longer at the centre and want to receive a summary of findings)

Appendix E: Parent letter

VICTORIA UNIVERSITY OF WELLINGTON
Te Whare Wananga o te Upoko o te Ika a Maui

Research: exploring relationships between built environments and children's lived experience

25 March, 2015

Tena korua   parents / guardians

My name is Ann Pairman. I am a registered early childhood teacher and have taught in ECE centres since 1982. I am currently a PhD student at Victoria University researching how the spatial configuration, and size of all-day ECE centres, interacts with young children's 'lived experiences' (everyday events as they are experienced by children).

The research involves a multiple case study that includes four for five spatially diverse all-day ECE centres. The management and teachers at [centre name] are interested in participating in this research. [centre name] building design is expected to contribute rich data to the study and I hope that the research process, and study findings, will be of interest to your ECE centre's community.

I would very much appreciate it if you would consider giving consent for your child to participate. Information about the research is attached. I am very happy to discuss the study in more depth with you and to answer any questions. Please email me if you would like me to call you, or to meet with you. I can arrange to meet you at the centre or, if several parents are interested, I can organise a parent meeting – whichever you prefer. My email address is ann.pairman@vuw.ac.nz. During my first week in the centre I will also talk with the children about the research.

You will find a parent consent form attached to this letter, and an 'agreement form' that you can fill out with your child if you think they are capable of understanding the letter and answering the questions. I am interested in foregrounding children's perspectives in this research, and have

included the children's agreement form as one way to enable children to participate in the consent process. I am happy to be available to answer any individual questions, so please don't hesitate to contact me.

This research has been approved by the VUW Ethics Committee (No. 21509, 12 March, 2015). The supervisors of this research project are:

Dr Bronwyn Wood Bronwyn.wood@vuw.ac.nz Ph: 04 4639611	Professor Carmen Dalli carmen.dalli@vuw.ac.nz Ph: 04 4635168

If at any time you have any questions or concerns about this study, contact Dr. Allison Kirkman, Chair of the Victoria University of Wellington Human Ethics Committee (telephone: +64 4 463 5676; E-mail: allison.kirkman@vuw.ac.nz).

Nga mihi nui,

Ann Pairman ann.pairman@vuw.ac.nz

Appendix F: Teachers' letter

VICTORIA UNIVERSITY OF WELLINGTON
Te Whare Wananga o te Upoko o te Ika a Maui

EXPRESSION OF INTEREST LETTER

Research: exploring relationships built environments and children's lived experience

25 March, 2015

Tena koe _____

My name is Ann Pairman. I am a registered early childhood teacher and have taught in ECE centres since 1982. I am currently a PhD student at Victoria University of Wellington and am undertaking research to explore how the spatial configuration and size of all-day ECE centres interacts with young children's 'lived', experiences (everyday events as they are experienced by children).

The research will use a multiple case study approach, and incorporate four for five *spatially diverse all-day ECE centres*. I plan to spend about twelve days (during a four week period) in each centre. I would like [centre name] to be part of this study because I think your centre's building design will contribute rich data. I hope that the research process, and eventual findings, will also be of interest to you and your centre community.

I have approached [manager/owner] about the research and [he/she/they] is happy for [centre name] to participate. I am now approaching you to see if you are also willing to participate. I realise that participation requires time and commitment, especially from teachers. I would very much appreciate you reading the attached information about the research and consider giving your consent to participate. I will also arrange to meet you and your colleagues to discuss the research, answer questions, and discuss any ethical issues or concerns you may have. Prior to the parent meeting I will provide you with more detailed information and distribute consent forms. After I have met with you, I will organize a similar meeting with the parents, and the children.

I am happy to be available to answer any individual questions, so please don't hesitate to contact me. My contact details are at the bottom of this letter.

This research has been approved by the VUW Ethics Committee (No. 21509, 12 March, 2015)
The supervisors of this research project are:

Dr Bronwyn Wood Bronwyn.wood@vuw.ac.nz Ph: 04 4639611	Professor Carmen Dalli carmen.dalli@vuw.ac.nz Ph: 04 4635168

If at any time you have any questions or concerns about this study, contact Dr. Allison Kirkman, Chair of the Victoria University of Wellington Human Ethics Committee (telephone: +64 4 463 5676; E-mail: allison.kirkman@vuw.ac.nz).

Nga mihi nui,

Ann Pairman ann.pairman@vuw.ac.nz

0210 2272 438 (cell) 04 9341788 (home/evening)

Appendix G: Children's assent booklet

VICTORIA UNIVERSITY OF WELLINGTON
Te Whare Wananga o te Upoko o te Ika a Maui

Kia ora, nǐ hǎo, hello, goededag, salut, guten tag, namaste, dia dhuit, talofa!

Hi _____

My name is Ann, and I am going to be spending time at [centre name] doing some research. 'Research' means that I will be trying to find out about something.

I want to find out how you, and your friends, use spaces at [centre name]. I wonder which rooms you like a lot, what places are good for different games, and where you go if you feel tired or want to be alone?

To find out about these things, I want to watch what you and the other children do, and to sometimes talk with you and ask questions. Some children might also like to show me around [centre name], draw pictures, or take photos of different places.

You can choose whether you would like to be part of this research or not by answering each of these questions:

Are you happy if I sometimes watch you playing, and write notes about what you are doing?	☐ YES ☐ NO
Are you happy if I take some photographs of you at the centre? (You can have your own copies of the photographs of you)	☐ YES ☐ NO

Are you happy if I sometimes make recordings of what is being said? (I use this when everyone talks fast and I find it hard to write all the words down)	☐ YES ☐ NO
Are you happy if you talk with me sometimes? (You can choose when you talk to me, so that I don't interrupt your playing)	☐ YES ☐ NO
Are you happy to show me around with one or two of your friends?	☐ YES ☐ NO

It is fine if you change your mind about what you have said. You just need to tell me, or tell your family or a teacher and they will let me know.

I am looking forward to seeing you at [centre name]

☺ Ann Pairman

Appendix H: Observation protocols

OBSERVATION PROTOCOLS

Exploring relationships built environments and children's lived experience

Researcher:
Ann Pairman, PhD student, Faculty of Education, Victoria University of Wellington

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Aim

Observations will aim to create a context-rich picture of how children occupy space, transform space, and interact socially in a variety of physical spaces in the centre. Observations will mainly result in brief narratives accounts describing particular incidents, and the context that surrounds them, and will focus on children in groups, as pairs or as individuals. In addition to watching and note taking, observations will include the taking of photos, occasional video, and the use of a digital voice recorder. Video will be used only when an event's complexity makes it hard to capture its richness through note taking and photos (for example children's complex movements in space or multiple conversations occurring at once), or when the surrounding noise adds significant context that is likely to be useful for later analysis.

Observations will focus to a lesser degree on teachers and their movement through spaces, their interactions with the physical environment, and their interactions with children during particular incidents or events.

Limits

Because observations aim to illuminate how children occupy, transform, and interact socially within physical spaces, I will aim to be in close enough proximity to hear children's conversations at times. However, where it is clear that children are seeking privacy (for example by making a 'hut' out of blankets and tables to hide in), I will respect the children's privacy by only attempting to hear conversation or observe play to

the extent that it informs my understanding of the general nature of, for example, the social interactions that are taking place.

I will remain attuned to any indications (verbal or non-verbal) that children or adults do not want to participate, for example to be observed, photographed, talked to by the researcher, or have their voices recorded. When this is the case, the participant's feelings will be respected and the observation will cease or shift to a more distant proximity.

If particular individuals have not consented to participate, the researcher will avoid taking visual images which include them. If such individuals contribute to conversations observed, I will (i) not include their comments field notes, (ii) not transcribe their comments from any recordings, and (iii) delete their voice from any recordings. To remind me to remove their voice from recordings, I will devise a code (e.g. saying 'x' after they have spoken). If there are a number of people who do not consent or assent, I will talk with the teachers about developing an appropriate system to help me with identification, such as a putting a small sticker on their back.

Appendix I: Semi-structured interview guide - focus groups

INTERVIEW GUIDE FOR TEACHER FOCUS GROUPS

Exploring relationships built environments and children's lived experience

Researcher:
Ann Pairman, PhD student, Faculty of Education, Victoria University of Wellington
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Focus group introduction

At the start of each focus group, I will revisit key points agreed in the teachers consent

forms. Specifically that:

- the discussion will be audio recorded and transcribed,
- participants will receive a written summary of the discussion and have the opportunity to review the material and provide clarifications, or corrections (member checking).
- participants identities will remain confidential.

Focus group rules

I will then explain the following key ground rules (below), and then ask participants for

any more suggestions. If further suggestions are made, I will ask all participants if they

are agreeable before including them. Finally I will ask all participants to agree to adhere

to the final ground rules.

1. Listen actively - respect others when they are talking.
2. Critique with respect - respectfully challenge one another by asking questions.
3. The goal is not to agree - it is to gain a deeper understanding.
4. Respect confidentiality - what is discussed in this room stays in this room.

Initial questions to ask semi-structured teachers' focus group

How long have each of you worked at this centre?

If you've previously worked at other centres, have they had similar spaces in terms of size and layout, or different?

How do you feel about the indoor space at _____ ? Why ... explain ...

How do you think your centre's philosophy, pedagogical approach, or culture influence the way you currently use space at _____?

Do you have rules about how children can use particular spaces? Can you tell me about those?

Does the size or configuration of your indoor space influence the way you create and use indoor areas _____? (if yes, in what ways)

Does the size or configuration of the outdoor area influence the way you create and use indoor areas at _____? (if yes, in what ways)

How has the use of particular indoor spaces changed over time (for example, the block area or lockers are located ...)? Why have these changes been made?

What factors to you think enable or constrain how children:

- use particular spaces,
- make changes to particular spaces,
- interact with their friends (e.g. play 'privately', 'territorialize' space, collaborate for extended periods, work in small groups, work in large groups, find their friends).

Are there spaces that the children tend not to use, (... even when the materials in this space change)? Why do you think this is?

Are there spaces that the children use a lot, (...even when the materials in this space change)? Why do you think this is?

If money (and land area) was no object, is there anything you would change about the size or configuration of the centre?

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Focus group wrap-up

At the end of each focus group the researcher will verbally summarise the discussion and ask the group if they agree that the summary represents what was discussed. Amendments will be made by agreement until all group members agree that the summary is representative.
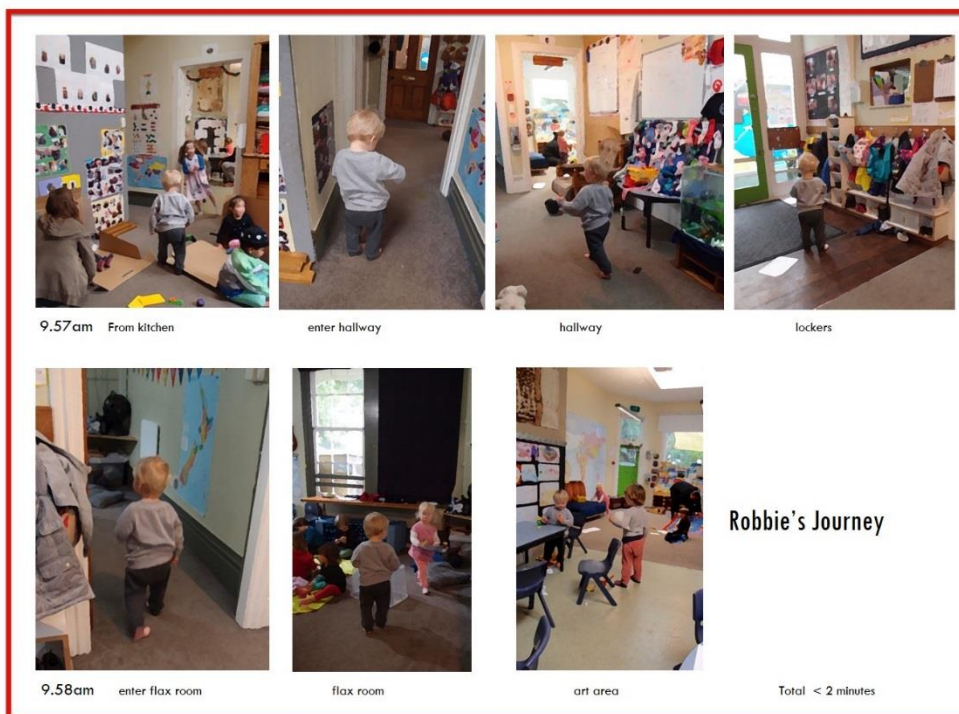
Appendix J: Animated spatial map – centre LO

Please refer to CD in the back cover of this thesis

Appendix K: Animated spatial map – centre LC

Please refer to CD in the back cover of this thesis

Appendix L: Robbie - 2 journeys at centre LC

Journey 1

9.57am   From kitchen   enter hallway   hallway   lockers

9.58am   enter flax room   flax room   art area   Robbie's Journey   Total < 2 minutes

Journey 2

10.11am   from outside   hallway   enter flax room   flax room

10.14am   lockers   art area   by kitchen   cupboard   ...and transporting (Athey, 2007)