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Space and materiality in early childhood pedagogy – introductory notes

Gunvor Løkken* & Thomas Moser**

This issue of *Education Inquiry* includes a thematic section with five articles about different aspects of the physical environment in Norwegian early childhood education institutions (kindergartens). The contributions represent five out of nine sub-projects in a research project entitled *Kindergarten space – materiality, learning and meaning making – The importance of space for kindergarten’s pedagogical activities* conducted at Vestfold University College (VUC) funded by the Norwegian Research Council (SHP-Strategic University College Programme). The authors are all members of the Kindergarten Space Research group at VUC and the contributions are united by an overall interest in exploring different dimensions of space and materiality in kindergartens. The project was led by Professor Thomas Moser in cooperation with Professor Gunvor Løkken and Associate Professor Solveig Østrem.

Space and materiality in Early Childhood Education and Care (ECEC)

There is a growing consensus that the physical properties in early childhood education and care institutions (ECEC institutions) can contribute essentially to children’s well-being, development, learning and growth. This assumption appears in educational (Clark, 2010; Gulløv & Højlund, 2006; Krogstad, Hansen, Høyland & Moser, 2012; Moser, 2007; Nordin-Hultman, 2004; Rasmussen, 2006), architectural (Buvik, 2004; Dudek, 2005; Dudek, Baumann & Henz, 2007) and more geographical and social-science oriented literature (Bjørklid, 2005; Spencer & Blades, 2006). Even if space and materiality by no means are new topics in ECEC, as we know both from Fröbel and Montessori, there still is a lack of research concerning the particular importance and meaning of space in educational processes (Kampmann, 2006).

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In our research group space is understood as the physical environment constituting kindergartens as educational institutions, including indoor and outdoor areas, buildings, the architectural design of landscapes, buildings and rooms, fixed installations, furniture and other removable artefacts, as well as elements that contribute to the aesthetic design of the institutions (Krogstad, Hansen, Høyland & Moser, 2012). This understanding also contains the term materiality. The concept of materiality refers to the physical qualities of artefacts and elements of nature and thus partially overlaps with the concept of space. Attention is directed particularly to the artefact's non-symbolic (i.e. material) meaning to human experience and action (Dante, 2005). Of particular importance for the present project is the sensory and experiential attributes of things, and thus the materiality impact on bodily (sensory motor) experiences.

On the other hand, use of the terms space and materiality is legitimised not only by the physical properties; it contains more. The thought of space as a context for education, well-being, learning and development (Moser, 2007), and people's experience and use of the environment, adds an individual and subjective dimension to the term that requires a complex approach embracing both material and meaning.

Also in architecture interest in the more functional and intentional aspects of buildings has grown recently. For instance, the concept of the usability of buildings describes the extent to which a physical environment can be used by individuals and groups to achieve specified goals, efficiency and satisfaction in a specified context (Hansen, Blakstad & Knudsen, 2009). In this context, an interesting relation between an architectural and educational perspective on space appears: Focusing on usability as a social construction that is related to users' experience of buildings is highly relevant for a subject-oriented educational perspective (Clark, 2010; Nordin-Hultman, 2004).

Further, the individual and social meaning of artefacts or, more precisely, the relation between humans and things as expressed in the conception of materiality, and the impact of things on experience and action (Gulløv & Højlund, 2006; Kraglund, 2005; Kraglund & Otto, 2005), opens up the more complex understanding of the physical environment as a multi-disciplinary juncture. The fact that the concept of materiality was recently included even in post-modern theories (Barad, 2003; Taguchi, 2010) can provide for the possibility of a better and deeper understanding of children's psychosocial processes in ECEC institutions and of how the physical world is becoming an important structural context for the creation of meaning and identity, belonging and autonomy. Space is experienced through the senses involving the whole body. It is the body that creates and recreates space (e.g. Larsen, 2006) and thereby also opens and limits experiential and action space for the individual child, groups of children, individual staff and staff groups. Seeing the body in relation to space and materiality and accepting that individual and collective values are expressed in things (Kraglund & Otto 2005) addresses educationally significant issues like power and power relations (who controls, who is in charge of space and

things), gendering (which spaces and materials have gender-specific attraction and affinity) and cultural inclusion/exclusion (are space and things fairly and equitable accessible by all children?).

In general, an analytical distinction between a psychosocial and physical understanding of the physical environment (Kampmann, 2006) seems relevant and fruitful for educational practice, especially if research approaches to space and materiality are multidisciplinary and holistic and thereby may produce in-depth knowledge based on empirical data from real life. In addition to the physical dimension, space as well as materiality is always constituted through the action and meaning making of the actors in the institutions and the organisation of educational activities in space and time (Aasebø & Melhuus, 2005). Nordin-Hultman (2004) claims that kindergartens may need more “action space” where children can find meaning in activities or play of their own choice.

Thus, the overall purpose of our research was to investigate how individual, social and physical spaces are related to each other, and how these relations may inhibit and promote children’s expression, meaning making and learning.

An inquiry into place, space and materiality in Norwegian ECEC institutions

The project *Kindergarten space – materiality, learning and meaning making – The importance of space for kindergarten’s pedagogical activities* started in autumn 2009 and finished in summer 2012. The two main purposes of this research project are: (1) to develop knowledge about the importance of educational relevant dimensions of kindergarten’s physical spaces and materials, how spaces are designed and organised and what activities and learning these spaces are inviting to; and (2) to develop knowledge and understanding of children’s active participation in giving meaning to and creating kindergarten spaces and materials.

A total of 13 researchers from different academic disciplines contributed to the project, including pedagogy, drama, mathematics, physical education, Norwegian language, religion and ethics, and arts and craft. Five contributions from four disciplines are presented below, two from pedagogy (Nordtømme; Odegard) and one each from drama (Nordbø), arts and crafts (Fredriksen) and Norwegian language (Granly & Maagerø).

Methodologically, the projects are similar in that all of them apply qualitative research methods and are conducted in one or a few institutions. Most of them use some kind of visual documentation for generating the empirical material. One study (Nordtømme) can be categorised as ethnographic by using observation (transcription of field notes) and photos, while another study (Fredriksen) has some ethnographic features but mainly represents an action research design. The latter also applies to Nordbø’s case study. Both Fredriksen and Nordbø mainly use video footages supplemented by field notes. Fredriksen also carries out a computer-supported analysis

of the material. Granly and Maagerø visited three kindergartens several times using different methods for data generation, including visual documentation (photo and video), interviews with staff and children, field notes and document analysis. The last contribution (Odegard) applies discourse analysis and the deconstruction of transcribed conversations in focus groups of preschool teachers about their experiences of pedagogical work with children and junk material.

Solveig Nordtømme's study *Place, space and materiality for pedagogy in a kindergarten* explores how kindergarten spaces and materiality can be vital to children's exploration of participation. It also inquires how the physical environment enables children to interact and position themselves in play and meaning making. Nordtømme's study is based on ethnographic fieldwork with two groups of 2- to 5-year-old children in two Norwegian kindergartens during a period of two months. The methodological framework is based on a point of view that considers children as body-subjects that seek meaning. Socio-cultural perspectives of learning and meaning making and Bourdieu's reflections on social fields and power relations also accompany the study. The main findings of this study describe how children create meaning and spaces both within and outside of pedagogically staged spaces, and how materiality creates power relations and interplay with the actors.

Biljana C. Fredriksen's article *Providing materials and spaces for the negotiation of meaning in explorative play: Teachers' responsibilities* is based on a qualitative, arts-based and cross-disciplinary study that aimed to understand how young children (ages 3–5) negotiate meaning while playing with tangible materials. The analysis shows that the qualities of the materials were important determinants of the content of the children's learning and that the teacher's attitude to explorative play was a precondition for their students' taking part in negotiations of meaning. In certain contexts, the teachers made materials available but focused on the process rather than the outcomes. These contexts developed into spaces where the curricula developed constantly through negotiations among the materials, the children and the teacher. Fredriksen discusses the teacher's role in providing physical and social spaces for the negotiation of meaning and curriculum development. Addressing the concepts of pedagogical improvisation, curricula-as-lived and intersubjectivity in instruction, this article interrogates the diverse competencies of the teacher but focuses primarily on the visual arts teacher's discipline-specific knowledge of visual arts materials.

Anne Lise Nordbø's contribution *Mind the gap! Creating community between teacher-actors and toddler-spectators in a performative event* is based on an inquiry into the framing of artistic effects in space. It also addresses the interactions between two-year-old children and adult performers. The aim of her study is to analyse staging strategies for the benefit of interaction as a participatory and democratic learning process. The empirical sources consist of video footage, observations and notes from the actor-teachers who performed with the toddlers in two small groups. Nordbø

discusses how the traditional communication gap between actor and audience can be surmounted. The study is a crossover between performance art and drama pedagogy, which Nordbø characterises as an interactive scenic playground. She discusses how toddlers can be active participants in performance art by employing the materials. She also discusses the actions used by skilled kindergarten teachers. Specifically, these actions include clearly expressing expected intentions, bodily behaviours and social interactions. The results of the study reveal the children's sensory and embodied nonverbal contributions to performative meaning making as they interact with both textiles and people, and thereby grow into a performative community. The study reveals that the interactions of toddlers with performers challenge dramaturgy and actors.

In the article *Multimodal texts in kindergarten rooms*, Astrid Granly and Eva Maagerø provide an overview of the results of their project "The Kindergarten Room: A Multimodal Pedagogical Text". They investigate what the multimodal texts in kindergarten represent and the extent to which they reflect and provide attributions to the children's activities. In addition, they studied whether texts on kindergarten walls and floors can be called pedagogical texts, and whether these texts establish a particular text culture. Their empirical material consists of video observations, photographs, field notes, interviews with children and teachers national and local documents collected in two of the kindergartens and photographs in the third. The authors' analytical approach is situated within the theoretical framework of Michael Halliday's social semiotics and systemic functional linguistics. A kindergarten room is a composite design that spatially utilises the co-deployment of various semiotic resources, such as architecture, language and visual images, and is thus viewed as a multimodal text. The multimodal analysis is based on the work of Kress and van Leeuwen. This study reveals a meaning potential and thus contributes to the body of knowledge regarding the factors that influence the composition of kindergarten rooms.

Nina Odegard's contribution *When matter comes to matter – Working pedagogically with junk materials* reports from her study entitled "When matter comes to matter: Recycled materials as a pedagogic idea". The article is theoretically based on an inter-disciplinary understanding of the concept of materiality. The study highlights a number of theoretical-philosophical perspectives, discussed in relation to the findings. The findings are elicited by analysing conversations in a focus group of seven people from preschool and school staff about their experiences of working with junk materials together with children. The group conversations are based on photographs and/or texts linked to the children's encounter with junk materials. One of the findings is the clear expectations of defining or naming *what* children make when they use junk materials to construct art works. The article forms a dialogue with Christina MacRae (2011), revealing similar results.

Theoretical approaches to the inquiry into place, space and materiality

Which theoretical approaches are appropriate to the inquiry of space and materiality in early childhood pedagogy? To analyse this question, in this section we take a closer look at the theoretical perspectives that played a more active role in the five studies. Nordtømme sets out from Fröbel's pioneering view of space and materiality as being vital to pedagogy. Space and materiality reflect *ideas* about children and child pedagogy. As we know, Fröbel materialised his view in play gifts (toys). Nordtømme makes explicit how the concept of *place*, seen as the concrete location in which children's actions are displayed, underlies and corresponds to the concepts of *space* and *materiality*. The space of a certain place is created both physically by the visible architecture of the concrete place, and socially by the (partly invisible) relations unfolding in such a place. In accordance with several studies, e.g. Otto (2005), the materiality of play materials, tools and toys is seen as socially interacting with humans, by providing opportunities, power and limits for human action. As such, space, materiality and social interaction are entwined. Accordingly, Nordtømme sees space and materiality as invitational and inspirational to children's activities and thus essential for children's experiences, meaning making and positioning in play and interaction. The physical and social space will change and transform according to children's embodied activity with concrete material in a specific place and situation. Children are *doing* space through play. With reference to Lave and Wenger (2003), this view of space and materiality links well with socio-cultural theories of situated participation and learning. Embedded in narratives from observed social and material play practices, Nordtømme highlights crucial ingredients in children's processes of meaning making and learning, power and positioning. Nordtømme argues that these processes also concern the creation of personal, social and cultural identities. In other words, the *doing* of space and materiality moves on several levels in children's lives.

The pedagogical significance of situational *interaction* between space, materiality and humans is made explicit in Fredriksen's study as *negotiation*. Fredriksen focuses on teachers' responsibilities to provide materials and space for the negotiation of meaning in children's explorative play, and especially on the *unpredictability* involved in these processes. Fredriksen draws especially on aesthetically inspired theory, like that of Bresler (1994; 2006) and Eisner (2002). These approaches argue for the ability of materials to provoke students' learning. The radical intersubjectivity of the student-teacher relationship (Aspelin, 2010) is seen as entwined with the teaching style as well as the provoking materials. This also fits with the more general socio-cultural view of the importance of acquiring knowledge through dialogic interaction (Bruner, 1990), and through the continuous negotiation of meaning (Fredriksen, 2011) as speaking bodies and body-minds (Dewey, 1925). With reference to Merleau-Ponty (1994) and Shusterman (2008), Fredriksen asserts the role of the knowing *body* in these processes. One consequence of these perspectives is that knowledge is constructed by negotiation

rather than transferred from teacher to student. In this light, Fredriksen underlines that the *resistance* of materials interacting with the human body that negotiates with it turns out to be especially productive for the children's ability to make meaning. Enlightened by Aspelin (2010), Fredriksen's conclusion is that what really matters is *between* – materials and human beings as well as between humans.

Extending the concern with the importance of what happens *between*, Nordbø's inquiry of the community between teacher-actors and toddler-spectators in a performative event is enlightened in particular by the theatre analytic theory of Fischer Lichte (2008) and performance theory of Schechner (2006). As these approaches are viewed to mind the gap between theatre performers and audience, Nordbø applies them to reduce such a gap between teacher-actors and toddler observers of performances. Interaction in this gap is linked to staging strategies, the actions of skilled practitioners (Molander, 2008) and educational democratic encounters (Biesta, 2006). What Fischer-Lichte calls a *feedback loop* is the exchange that goes on when the audience response is answered by teacher-actors, vocally, embodied or by some other expression. The loop can halt, break or continue in between actor, audience and event, and thereby extend the response as well as inspire the dramaturgy. In such an exchange, role reversals between observers and actors are included, depending on careful hearing and listening and on *presence* in a particular place, seen as a space-time environment (Power, 2008). In Nordbø's study, feedback loop and role reversals are the active staging strategies that form the performance community of the space-time environment of a scenic playground. This phenomenal space is linked in particular by the specific material of a large piece of blue plastic.

The pervading characteristic of the three studies commented on so far is the theoretical concern with how to understand what happens *in between* educational processes, be it in the discipline of pedagogy (Nordtømme), visual art (Fredriksen) or performance art (Nordbø). In these studies, the phenomenon of *between* is named as social, dialogic and situational interaction, as participation, play practices and meaning making, and as construction, negotiation and positioning. Further, what happens *between* also concerns exchanges of feedback loops and role reversals, seeing, hearing and answering, and *presence* in a space-time environment. Special materials can also provoke and *link* relational learning processes and experiences. Moreover, children's active participation in processes of constructing what is going on and of what is to come in peer play as well as in explorative play with teacher-attended materials and teacher-staged performative events, points in the direction of *democratic* experiences and practices. Certainly the three studies also confirm the entwinement of place, space, materiality *and* human action. How should we name this entwinement when it is pervaded and linked by the significance of what happens between various elements as shown in actual studies? Could it perhaps be a notion of *betweening* as ways of minding the gaps involved in *doing* place, space and materiality in human life?

If so, what would be the *betweening* of multimodal texts in kindergarten rooms, as inquired by Granly and Maagerø? In viewing kindergarten walls and floors as pedagogical texts with a meaningful potential, the theoretical point of departure for this investigation is Halliday's social semiotic and functional linguistic theory of the metafunctions of language (Halliday & Matthiessen, 2004). The three metafunctions of such language concern the representation by words of phenomena in the world, of communicative acts and of text as coherent utterances. One *betweening* here is that language and context dynamically interact with each other. Accordingly, the texts of the kindergarten walls and floors communicate something to and about the daily life there, as well as about the more general culture. To expand the representation by words to other text modalities, Granly and Maagerø also include the notion of *multimodality* as developed by Kress (2003) and the grammar of *visual meaning making* (Kress & Van Leeuwen, 2001, 2006). Writing, image, speech and space are all different modes of meaning. Texts that include several modes are multimodal. The meaning of such texts relies upon the relations between modalities. The grammar of visual meaning making suggests the *betweening* of human meaning making in interaction with visual signs.

One concretisation of *betweening* as inquired in the study of Granly and Maagerø is the interaction between the children and the texts on the walls, and the ways the texts represented the children through e.g. photographs, paintings and drawings. According to the theoretical enlightenment of the study, the walls of the kindergarten reveal a variety of modes, creating a rich multimodal context for the children. The *ideational metafunction* of these texts is their organisation in clusters based on a topic. However, the *interpersonal function* of the texts is only found infrequently as an invitation to communication between the children. But this function is clearly demonstrated when the children lead the researchers to texts that the children themselves find important. Moreover, although the texts on the wall are supposed to act as documentation and information between kindergarten activities and the parents, few parents demonstrate an interest in this. The conclusion of the study is that, although there is a rich representation of multimodal texts in the kindergarten room, the texts could be used more actively as pedagogical texts to enhance children's learning processes and multimodal text competence.

Finally, in addressing kindergarten children's work with junk materials?, Odegard's article forms a dialogue with McRae's study on the same topic (2011). Odegard also departs from Taguchi's (2010) view of pedagogical documentation as being a material discursive apparatus. In turn, this view is derived from Barad (2003) who understands the documentation itself as an active agent in the production of discursive knowledge. Barad claims that *knowing* comes from a direct material engagement with the world. She also claims that language has gained excessive power over the inquiry of matter in social research.

Similar to the theoretical stand taken in Nordtømme's article, materiality and meaning according to Odegard do not constitute separate elements, but forms

between and as mutually dependant on each other. Thus, the observed object cannot be separated from the subject observing it. Moreover, a situation cannot be observed without seeing it in relation to the material. Inspired by McRae's study, the children in Odegard's study were encouraged to work with junk materials without having to name or define what they do. These ways of *making* the junk material can be the work of (Foucault's) *heterotopia*, of sites that bring many different things together, and therefore also the potential of *leakages* when it comes to naming and definition. These *lines of flight* are important for being freed from the conventional pedagogical thinking that the aim of material exploration is a defined product. Odegard finds that lines of flight and leakages to new relationships are offered through the intense and empathetic relationship between material things and 'thinking' simultaneously with human hands, senses and the brain. Junk material constructions that resist labelling become the focus of interest as they seem to open rather than close creative processes. In conclusion, Odegard claims that the incompatibility of junk materials in the form of different sizes, colours, shapes and textures, with their diversity and complexity, create more disparate situations, challenges, meeting places and play experiences than predefined toys and pedagogical material can do. This conclusion can be paralleled to Fredriksen's main conclusion that the *resistance* of certain materials turns out to be especially productive to children's meaning making.

By environmental consideration, the junk materials explored in Odegard's study are also rescued from being defined as rubbish. Instead, matter is given a new and recycled life, between multiple relations.

Closing our editorial notes to let the following articles speak for themselves, we still would like to raise the question of whether the five studies reported are studies of *posthumanist performativity*. One reason for asking this question is Barad's (2003) powerful influence on *the material turn* in early childhood research. Human language and culture have been granted their own agency and historicity while matter is figured as passive and immutable, Barad says. We seem to have forgotten that materiality itself is always already figured within a linguistic domain as its condition of possibility. According to Barad, a posthumanist account questions the givenness of the differential categories of "human" and "nonhuman". Meaning is claimed not as *ideational* but rather as specific material (re)configurings of the world. Discourse is not what is said; it is that which constrains and enables *what* can be said. Concepts and materiality are an intimate relationship. Matter is always an ongoing historicity, not a fixed substance. Moreover, human bodies and human subjects do not pre-exist as such but are part of the world in its open-ended becoming. "Human" is not a fixed pregiven notion; human, like matter, matters through its performativity. And as such in progress of betweening we would add.

Most of what is said in this briefly selected sketch of Barad's (2003) posthumanist view can be argued to fit into the perspectives and results of the following studies.

But *posthumanist*? Will that be the preferred label running through the inquiries of kindergarten space and materiality? And, following McRae and Odegard, should the present constructions be labelled at all?

However, we leave this questioning open-ended for the performativity of an answer yet to come.

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Gunvor Løkken is professor in early childhood pedagogy at the Department of Pedagogy at Vestfold University College. Her current research interests are methods of observation connected to the phenomenology of perception and to sensory ethnography. These foci combine with theories of relational aesthetics and the potential of what can be called sensory pedagogy.

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