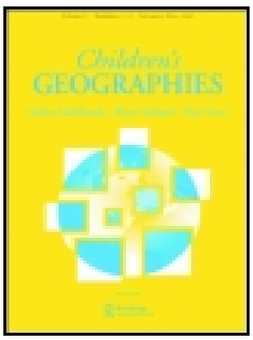

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Vibrancy, repetition and movement: posthuman theories for reconceptualising young children in museums

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ABSTRACT

This paper argues for an expanded field of inquiry to conceptualise young children in museums. Drawing on Murris' [2016. *The Post-Human Child: Educational Transformation Through Philosophy with Picturebooks*. London: Routledge] analysis of childhood constructions, we discuss how cognitive and socio-constructivist models of the child dominate childhood and museum studies. We argue for the potential of Murris' figure of the posthuman child to reconceptualise children in museums. This perspective offers a greater focus on the potency of objects themselves, and the animacy of the non-human aspects of the museum. It is also underpinned by a theoretical shift from representation to non-representation [Anderson, B., and P. Harrison. (2010) "The Promise of Non-representational Theories." In *Taking-place: Non-representational Theories and Geography*. Farnham: Ashgate], presenting us with new ways to address questions such as 'what does that mean?' when we observe children's learning in museums. Working with data that has proved resistant to interpretation across a range of research projects, what we call 'sticky data', we elaborate on three themes emerging from this reconceptualisation: vibrancy, repetition and movement.

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Introduction

When observing what children do in museums, sometimes predictable, sometimes completely surprising, researchers and museum practitioners find themselves asking different versions of the same question: *what does that mean?* This question is frequently phrased in other ways; What does this behaviour signify? What are these children learning? How successful is this exhibition for this audience? What is the value of children visiting museums?

With very young children (under five years), in particular, the answers to these questions often seem elusive. Young children in museums move a lot, they run and dance, they are frequently silent, they are drawn inexplicably to certain objects over others, they make unexpected connections (sometimes weeks later), they can seek repetition, develop rituals, and they rarely use interactives in quite the way the designers envisaged. In this paper, we have curated a series of pieces of what we have called 'sticky data' from across a range of research projects, drawn from many years of researching young children in museums and galleries. What this 'sticky data' has in common is that it has caused us to 'stutter' in its resistance to interpretation (MacLure 2013, 663).

For us, 'sticky data' sticks out, sticks to and often gets stuck in our thoughts, feelings, in our throat, on the page, in fieldnotes, camera lens or memory. Not only are they full of molecular reactions and

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interactions, stubbornly seductive and curiously viscous, such data can jolt or conjure a sense of wonder, 'where bodily matters resist incorporation into representational schemata' (MacLure 2011, 1002). 'Sticky data' might be particular things of interest, stuck places (Lather 1998), thresholds and trails (Ingold 2011), or a 'bone in the throat' (MacLure 2006), emerging from museum contexts. Puzzling fieldnotes; niggling questions; a methodological dilemma; or a jarring object, are all examples of data that hovers, gnaws, prods and teases us. By re-turning to these snippets to look across, with, and in-between them, we hope they can work as a productive assemblage to move us towards new understandings of young children's museum visiting.

Three constructions of childhood: examining their implications for children in museums

Following Murris (2016) and Anderson and Harrison (2010), we find it useful to think in terms of three particular constructions of childhood that could frame how we conceptualise children as meaning-makers; the cognitive, the socio-constructivist and the posthuman. We begin by re-turning to one particular snippet of research data; a description of two-year-old Matilda and her encounters with objects in the museum gallery. This data emerged from an evaluation of the Clore interactive studio in Manchester City Art Gallery (Jones and Holmes 2014). The stimulus for both the envisaged interactions and the overall design of the studio was Grayson Perry's series of six tapestries: 'The Vanity of Small Differences'.[1] When designing the interactive family space, artists Sarah Marsh, Michiko Fujii and Katy McCall together with members of the Gallery's Family Learning Team responded to three particular threads that Perry's tapestries had prompted: the swirling continuous line; the vibrant colour palette and humble domestic objects that commonly furnish our homes (Figure 1):

> She picks a sponge up and places the soft side against her cheek, whilst her other arm is held out to one side, with the empty hand also held as if gripping. It too seems to be thinking, making a connection with the other arm, the other hand, the sponge and her cheek. One by one each of the sponges is raised to her cheek … Before being dropped into a red plastic container … (Observation, 2014)

This data snippet provides us with a way to think through the three above-mentioned theoretical lenses (cognitive, socio-constructivist, posthuman) where issues of legibility and interpretation

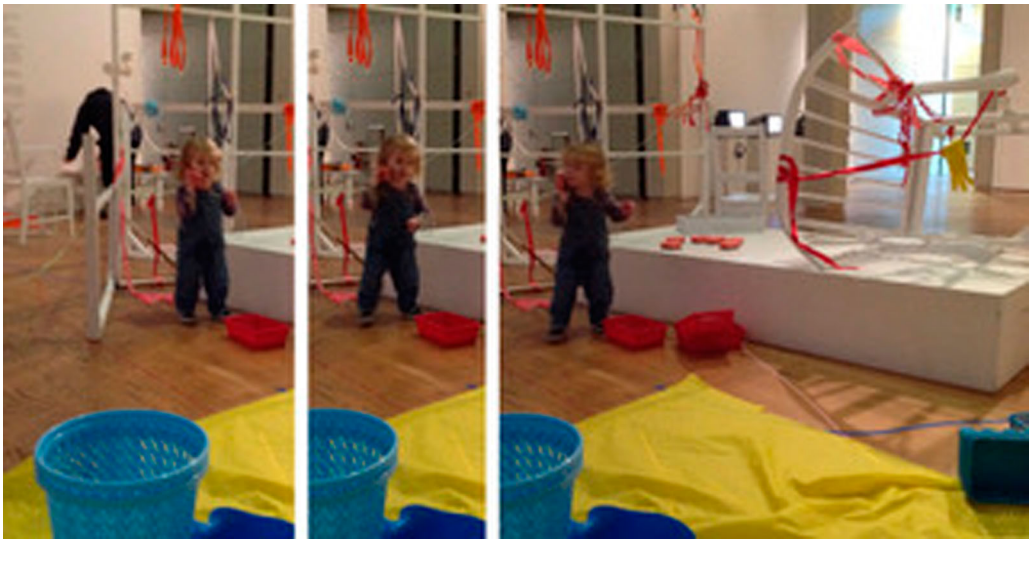

Figure 1. Matlida and the sponges.

surface. In offering alternative readings that are potentiated within each theoretical frame, we also explore how specific constructions of the child are woven into and map onto ideas/beliefs/theories about museums as sites of learning.

The cognitive child

Murris (2016) together with other commentators (Morss 1990; McHoul 1986; Burman 2016) aligns cognitive constructions of the child with Piaget's learning theories and developmental trajectories where 'the child' is on a linear journey towards becoming-adult. Under-gridding this progression is a 'genetic epistemology' whose end-point is a universal, scientific rationalist body of knowledge (Jenks 2005, 21; Burman 2016, 237). Burman observes that while criticisms of Piaget have tended to focus on experimental flaws of his method, Piaget himself was more interested in the *status* of children's knowledge, than what they knew (2016, 241). On this basis, Piaget characterises child development as a movement from a body engaged with objects and the stuff of the world (the sensorimotor stage), progressively developing towards a state where mind supersedes the body as the locus of increasingly abstract and logical knowledge (the operational stage). The coupling of this sequential journey towards adulthood with a naturalised progression towards universal knowledge, produces a normative framework through which to understand the child. So, whilst this cognitive constructionist account does pay attention to a child's perception of the bodies it encounters (both human and non-human) it nevertheless reads 'progress' as moving away from this 'primitively' perceived understanding of a concrete world, to one where world and meaning are separated – where the world can be abstracted and accurately represented conceptually, by the mind (Anderson and Harrison 2010).

Matilda and the sponges: reading 1

From a cognitive point of view, Matilda demonstrates sensory mastery as she gets to know objects in terms of their material qualities: texture, weight and colour. She does this through her senses and active manipulation: touching them and moving them through space. Piaget would describe her repetitive actions as 'practice' play, motivated by the 'pleasure derived from the mastery of motor activities' (Nicolopoudou 1993, 3). Or, as he explains: 'sensorimotor intelligence aims at success and not at truth; it finds satisfaction in the achievement of the practical aim pursued, and not in … explanation. It is an intelligence only lived and not thought' (Piaget 1962, 238). As such, Matilda's encounters with the sponges are mediated by a pleasure-seeking body that is not yet able to think at a representational level of cognition. Matilda, through repetition, will discover the permanency of the sponge. Within a cognitive framework, where mind over matter is the order of things, Matilda is learning from actively exploring the concrete, real world. Through practice play, she assimilates the sponge's qualities, which will in time produce a mental image of the sponge. Through a process of accommodation these mental concepts develop into symbolic thought, and learning moves from concrete to abstract. In the higher symbolic stage, words (signs) stand in for objects (although Matilda has not uttered the word 'sponge' or 'soft' yet, this is where her learning is pointed). This step is critical in relation to the emergence of conceptual as opposed to perceptual space (Piaget and Inhelder 1956, 452). This change in thinking is one of progressive separation between the thing and the representation of the thing; between world and thought. According to this cognitive account, the sponges are inert objects that Matilda acts upon and it is her mastery of them that makes them instrumental in developing her powers of judgement.

The cognitive child in the museum

The museum as both a caretaker of collections and, as a place of knowledge acquisition has a long history of deploying objects as educational tools. Conn (1998) argues that in the late nineteenth

century, museums, as opposed to universities were thought of as sites of production of new knowledge, precisely because they were repositories of real objects as opposed to texts. In this object-based epistemology, the collection was placed at the centre of scientific learning. He charts how universities displaced museums as sites for knowledge production whilst museums were increasingly perceived as sites of learning for children, rather than adults. The interest in museums as sites for children's learning blossomed in the 1960s when Piaget's learning theories, together with Dewey's ideas about experiential learning, produced a burgeoning interest in the learning potential of contact with objects themselves (Hein 1998; Paris and Hapgood 2002). While this discovery-based, hands-on approach to objects had a long lineage prior to Piaget's influence (from Pestalozzi's object lessons to Froebel) it nevertheless gained particular purchase at this moment within a wider narrative of progressive education (Hein 1998). Learning then is understood as actively constructed, in contrast to transmission models of knowledge (Hooper-Greenhill 1999). However, while the learner is active, the role of the object remains passive. Meaning inheres in the object, awaiting discovery through handling. 'Although the world and matter is understood as important to interact with for learning to be constructed, it is basically, a "tool" and something passive, "out there" to construct knowledge about the world' (Lenz Taguchi 2009, 46).

The socio-constructivist child

A socio-constructivist account of childhood shares a cognitivist preoccupation with representation (Anderson and Harrison 2010), but here representation is de-naturalised. Knowledge is produced through and with the social and cultural milieu, rather than by an essentialised individual. The child is understood as discursively produced through a process of social and cultural signification. This new emphasis draws our attention to the social and language as the carrier of meaning. Language holds a 'god-like centrality in the construction and regulation of wordly affairs' (MacLure 2013, 660). This deep preoccupation with representation through words and symbols (Anderson and Harrison 2010), challenges the evolutionary approach to epistemology, but continues to work within a binary of a real world as separate from cultural interpretation. Through language, the autonomous child is simultaneously constructed and constructs the world; a world amenable to analysis and interpretation through a process of discursive de-construction.

Matilda and the sponges: reading 2

In a socio-constructivist reading of Matilda, we might pay attention to the way the sponges she interacts with could be read as cultural signifiers. We might also attend to ways her character might have been produced through the cultural expectations of her caregivers (including her gender). By playing with the sponges in the interactive gallery and then moving through to Grayson Perry's tapestries, Matilda could be expected to notice and identify the objects that she has encountered in the 'real' when viewing the images. Her accompanying adults would be able to sign-post these connections, encouraging Matilda to name these through language. The sponges somehow 'stand in' for the adult/human in that they carry the planning for learning that has gone on prior to Matilda's encounter with the sponge. What Matilda learns with and about the sponge is always judged against predetermined criteria. The sponge pre-empts the learning being made available to her via the more knowledgeable (gallery-trained) adult (even in her/his absence).

The socio-constructivist child in the museum

Socio-constructivism represents the dominant theoretical framework for thinking about children in museums (Hein 1998), in which visitors (including children) are seen to make sense of their experiences in museums through social interactions, based on prior knowledge and experiences. As Kirk (2014) notes, much research on families in museums understands learning as a deeply social activity,

with museums described as 'informal learning settings'. Ellenbogen, Luke, and Dierking's (2004) literature review on families in museums emphasises the family unit, their interactions and collective meaning-making. Particular interpretations of Vygotsky's (1978) work are also taken up within museum learning literature, emphasising talk as a pre-eminent tool for learning. For example, Crowley et al. (2001) show how parent/child conversations can build scientific concepts by selecting, encoding and interpreting relevant evidence offered by the exhibits in a science museum, and Ash (2003) shows that fine-grained analysis of family conversations in an exhibition can evidence what is being learnt. This emphasis on adult/child interaction is also evident in both Dooley and Welch's (2014) scale for measuring the quality of parent/child interactions in museums, and Leinhardt and Knutson's (2004) large-scale study of family visits to museums. In the UK, New Zealand and Australia, some of the largest and most influential research studies on children in museums look specifically at how museums support mandated curriculums (Clarkin-Philips et al. 2013; Hooper-Greenhill 2006; Piscitelli and Anderson 2001). Whilst these studies draw on a range of methods and theories of learning, the overall effect has been to create ever tighter alignments between children in museums and how their related talk/conversation provides evidence of learning. The influence of social constructivism in the literature outlined, narrows the focus on children's behaviour in museums, where social interaction, talk, purposeful and symbolic meaning are considered most relevant. This research reflects a human-centric bias (albeit in relation to objects and displays), even where children are encountering unfamiliar or fascinating buildings and objects that engage them with singular absorption.

We turn now to the idea of the 'posthuman' child (Murris 2016) as a way to open up new possibilities for answering the question 'what does that mean?' when young children visit museums. We are thinking in particular about two directions of thought; firstly, a decentring of humans, which allows for non-human objects and things to be foregrounded. Secondly, a recognition of the potential of non-representational engagement with the material world. We return again to Matilda but pay less attention to her *per se* and in so doing become sensitive to the complicated way that relations between human and non-human actants circulate within the observation.

The posthuman child

Murris' (2016) notion of the posthuman child radically re-configures the two previous constructions (cognitive and socio-constructivist). It challenges the notion that the 'competent child' might be a 'predetermined map' (Olsson 2009, 15), paying attention to that which is beyond representation. Inheriting insights of both previous constructions of the child; that representation matters, that the social order is not fixed, and that signification is connected to extra-linguistic forces, it tries to re-articulate these through a radical decentring of the human subject (Anderson and Harrison 2010). This approach places greater attention on how encounters with material objects are deeply implicated in the emergence of meaning. Meaning, therefore, has to be construed differently. Rather than perceiving it as something out there that can be discovered or explained, it is understood as elastic, where it 'begins in a milieu, in the midst of experience' (Manning 2016, 116). The shift from seeing the human subject as the sole locus of agency, recognises that meaning can emerge through mutually active relationships with the non-human; materials, places and objects are understood as having agency. Challenging the idea that language simply represents pre-existing things (Murris 2016, 90), this works against the logics of representation, where meaning is separated from the physical world. Meaning, instead, emerges from diffuse and diverse relationships between non-human and human. Rather than the child acting on the world, materials also act on the child; *intra*-action rather than *inter*-action (Barad 2007).[2] The posthuman child is construed 'as entanglement; constituted by concepts *and* material forces, where the social, the political, the biological … are interwoven and entwined – all elements intra-act and in the process "lose" their boundaries' (original emphasis Murris 2016, 91). This approach also places us as researchers differently; it both moves us away from illustrative modes, as well as from approaches where the researcher reflects upon data to make sense

of it from their subjective position. By taking the non-human more seriously, this approach gives agency to the data itself, so that data can 'speak back' (Pacini-Ketchabaw, Kind, and Kocher 2016, 3) allowing new thoughts to emerge. Furthermore, it demands we try to 'install' (Hultman and Lenz Taguchi 2010, 537, original emphasis) ourselves in our encounter with data, so we lose a clear division 'between what should count as objects or subjects' (Hultman and Lenz Taguchi 2010, 538). One example of this is how the 'sticky data' we discuss in this paper has caused us to stutter, to pause, to scratch our heads. For years, these data have had an effect on us. They have had an agency of their own, and that agency has played a role in the writing of this paper.

Matilda and the sponges: reading 3

In this final reading, as researchers, we challenge, 'our habitual and anthropocentric ways of seeing' (Hultman and Lenz Taguchi 2010, 527), by giving Matilda's body, the sponge and the red container a more active part in the encounter. Here, Matilda is displaced as the sole intentional author of her actions; instead, we ask, what if the act of picking up, touching, and then dropping the sponge, did not belong fully to Matilda, but to the assembly of sponge, body and plastic container? Rather than Matilda performing actions on the sponge, there might be multi-directional forces at play in a 'continuous exchange of back and forth' (Pacini-Ketchabaw, Kind, and Kocher 2016, 27). Here, we see Matilda less clearly as distinct and separate from the space and materials that she is *intra*-acting with. The sponges emanate desire, driving Matilda to reach for them, and stroke them across her cheek. Sponge and hand move together, a dynamic contact that seems to have an effect on her other hand which appears to respond in automatic sympathy. The plastic container also plays a part in the encounter, inviting the sponges to fall into it.

In her sensorimotor absorption Matilda might well look like a Piagetian child who through repetition 'practices' play. However, we want to suggest that in each seemingly repetitive move something qualitatively different occurs; there are always 'improvisational threads of variability' (Manning 2016, 2). Massumi elaborates, noting that 'each repetition will be different to a degree, because there will be microvariations that give it – [the encounter with the sponge] – its own singular experiential quality' (Massumi 2011, 50). Massumi sees these repetitions as characterised by 'thinking-feeling', a quality working against the ontological spilt valorising mind over the body. Similarly, Anderson and Harrison (2010) employ the term thought-in-action, whilst for Sheets-Johnstone 'the thinking is the movement' so that 'to think is to be caught up in the dynamic flow; thinking is, by its very nature, kinetic' (as quoted in Ingold 2013, 100).

This thinking-in-movement produces meaning which we can see happening but which we cannot, with any degree of certainty, name. Thinking about Matilda's encounter with the sponge, we could resort to seeing it as categorisation, or as a sorting exercise. But to do so, we have to forget the intensity of her concentration, the stillness that surrounded this moment, the inexplicable 'something' that was occurring in the movements between hand, cheek, sponge, redness, memory, sensation and so on.

The posthuman child in the museum: taking notice of 'that inexplicable something'

Posthumanism affords a re-thinking of how 'sticky data' or empirical materials drawn from different locations and times, entangle with theoretical constructions of childhood to open into a speculative and expanded field of inquiry as

> … the 'past' and the 'future' are iteratively reconfigured and enfolded through one another: phenomena cannot be located in space and time; rather, phenomena are material entanglements that 'extend' across different spaces and times … Neither the past nor the future is ever closed. (Barad 2007, 383)

Barad's sense of iterative enfolding of material entanglements over time has provoked our re-turn to cognitive and socio-constructivist models of the child in museum studies to re-think combinations of

data phenomena. Perhaps like earthworms making compost, we are 'turning the soil over and over … ingesting and excreting it, tunnelling through it, burrowing, all means of aerating the soil, allowing oxygen in, opening it up and breathing new life into it' (Barad 2014, 168), as constructions of childhood that insist on human-centredness seem 'no longer an adequate or convincing account of the way of the world' (Badmington 2011, 381).

A posthuman lens offers two inter-related ways to *re-turn* data drawn from museum studies. Firstly, accounts of children in museums could pay more attention to non-human aspects of the experience, and the way in which these are entangled with (and inseparable from) what children do in museums. As such, agency arises through intra-actions between people and things in the world. When we focus primarily on human actions, other aspects of the event fade into the background (Hultman and Lenz Taguchi 2010). Instead, following Murris (2016), we take seriously an acknowledgement that humans are not the only things active in the world, in order to better account for children's entanglements with places and objects in museums.

Secondly, we make a move away from representation, to re-think what counts as meaning. As Anderson and Harrison (2010) observe, much research understands the world and its meanings as separate, in that meaning is seen as symbolic. Applying this thinking to the example of a child in a museum would be to record the actions and words of the child, and declare that these express their conceptual skills or evidence of a specific kind of learning outcome. A non-representational approach to understanding meaning and the world, allows us to also acknowledge meaning as 'thought-in-action' (Anderson and Harrison 2010, 6). A great deal of what we do in everyday life, we do without thinking about it. A great deal of what a child does in a museum, they do without thinking about it, and would struggle to explain it in words. Why did you run up and down that corridor? Why are you so very attached to that small plastic magnifying glass? Much of our 'sticky data' on young children in museums involves experiencing with the body, in ways that defy verbal explanation. When research works with conceptual models that can only account for what can be explained in words, other aspects of what takes place are usually disregarded.

Taking up this notion of children's entanglement (Barad 2007) with agentic, non-human objects (Hultman and Lenz Taguchi 2010) and meaning as thought-in-action (Anderson and Harrison 2010), we will look at other examples of 'sticky data' to *re-turn* and think with. Working with this expanded field of inquiry, accommodating the non-human and aspects of children's experience beyond representation, we explore what kinds of new insights, or alternative ways of posing and answering the question 'what does that mean?' become available to us.

The vibrancy of things

J, a ball of clay, and a tin boat

> J was holding a tiny ball of white clay, which he had been carrying around for some time. He put the ball of clay down, then asked where it was and, relocating it, continued to hold it. He also held a metal boat, which he really seemed to like. Then he dropped the clay accidentally in the boat! Whilst the grown-ups peered into the boat to see where the clay had gone, J ran over to the craft table to get a fresh tiny ball of clay to hold.

This observation was collected as part of a Yorkshire-based research pilot study looking at how museums can offer engagement with the arts to young children and accompanying adults (Hackett et al. 2016). Whilst the project was interested in how the work and ideas of artists and aesthetic objects might inspire young children's creativity, it was these tiny ways in which arts materials seemed to matter to children, often in defiance of a logical explanation, that emerged as an insight from the study.

Rautio (2013) describes practices she observes in young children in Finland that have some similarities with J and his ball of clay. Such practices, including picking up and carrying aesthetically pleasing stones, or arranging pins on a pincushion according to colour and pattern, are described

by Rautio as autotelic practices, that is, 'internally motivating in that the activity is the goal and the reward in itself' (395). Understanding some of the ways in which children play with objects as autotelic removes the need to find a verbal, rational explanation for *why* a child does something and *what* this could mean. Thus, children carrying stones in their pockets, or J rolling a tiny ball of clay with his fingers, are examples of thought-in-action, or non-representational aspects of children's experiences in museums. Rautio suggests if we tried to find a reason behind children who carry stones in pockets; 'Explanations would surely surface and lend themselves to be neatly categorized.' However, she goes on to argue:

> we would do well to let go of insistence on causality, linearity and 'neatness' in our conceptualizations. The child-with-stones could be approached as if horizontally, as a momentary event produced by a mesh of related bodies (human and non-human). This would allow us to reconsider the seeming simplicity of the observation that children seem to carry stones (or sticks, corks or any other item) for the sake of carrying them. (Rautio 2013, 397)

What then drives the action when children pick up stones, or when that tiny ball of clay seemed so meaningful to J? As we have noted, posthumanism allows us to appreciate the intra-actions between human and non-human actors. We are thus relieved of the need to ask J 'why are you so attached to that ball of clay? What does that mean? What are you learning?' Bennett (2010) makes a distinction between 'object', which refers to the way a thing appears to humans, and 'thing', which is where matter exists and can influence the world 'in excess of their human meaning' (20). In this case, the clay has a rational human-prescribed use and meaning in the arts workshop, as a material for children to model and create with. However, in excess of its purpose, it also triggers affect, where it irresistibly summons the fingers of J to twist, roll and squeeze it.

Museums, as repositories of objects in the service of education and knowledge transmission, have always taken the power of objects very seriously. Furthermore, museum objects have been open to on-going re-conceptualisation as dominant discourses of knowledge and historical narratives have been challenged. Understanding museum objects as themselves 'complex material objects' (Dudley 2014) rather than mediating specific learning about the world or lives of other humans has been written about in the wider museum literature (Dudley 2014; Geoghegan and Hess 2015; Howes 2014; Woodall 2015). However, these ideas are seldom applied to thinking about young children in museums (for exception, see MacRae 2007). This difficulty in connecting the literature on the materiality of museum objects with children's experience in museums, we argue, lies in the dominance of cognitive and social constructions of childhood in museums. In these constructions, interactions with other humans, particularly adults, using talk and other representational practices to abstract out meaning from the experience of the world, are frequently presented as prime examples of quality museum learning.

Working with posthuman theories helps us understand a seeming lack of prior intentionality in J's attachment to the ball of clay. They allow us to let go of explaining J's actions instrumentally, or by asking J to explain his own actions. Instead they open a space to give value to and recognise a capacity 'to affect or be affected by human and non-human materialities' (Anderson and Harrison 2010, 16).

Thinking in movement

Running through galleries with A

> A likes exploring the paths of the upstairs galleries – there are lots of quite narrow corridors and rooms that connect together in unexpected ways. A walks slowly for a few steps, then runs so fast it seems like his legs might not be able to keep up, then stops and does it again.

A is a 17-month-old boy, the youngest participant in a study of children in Humber Museums. A's museum visits were dominated by a seemingly urgent and irresistible need to run through the many corridors and inter-connecting rooms in this building. A's running through the museum galleries is

another example of 'sticky data' in that, if we were to ask why he decided to run in this space and what he learnt as a result, answers would not be forthcoming. The search for a rational explanation, or for intentionality in these scenarios, comes from an assumption that thoughts exist first in the mind, then are actioned by the body. Here, 'a self-sufficient body is regarded as a body that can consciously make decisions based on a strong sense of where the body ends and the world begins' (Manning 2016, 112).

This way of thinking about children in museums enacts a well-established Cartesian division between body and mind. Sheets-Johnstone (1981) makes a distinction between thinking through movement and thoughts about movement. Thoughts about movement might be along the lines of 'what if I raise my leg up here?' However, thinking in movement is thinking that begins in the body, and emerges through the body's exploration of its possibilities for moving, being and sensing. This kind of thinking takes place in the moment, in the movement, and between the body and its experience of place.

When young children think in movement, the notion of intentionality does not work because firstly, thinking is happening through the body (rather than the mind thinking about body movement, and then enacting it), and secondly because this kind of thinking-movement occurs between the body and place. Sheets-Johnstone writes 'a certain way of moving calls forth a certain world, and a certain world calls forth a certain way of moving' (1981, 405). In her description of dancing in the natural environment, Kramer (2012) describes how unfamiliarity, obstacles and the challenges of moving in such an environment open up possibilities for greater attunement between body and place. As such, the environment itself plays a crucial role in how movement emerges, in the moment, as the body connects with 'the liveliness of things':

> I am no longer 'alone' in producing movement but can feel both ground and sky rise towards me, allowing me to leave all questions behind, all lostness of what might come next, and inviting instead the pleasure of 'just moving'. (Kramer 2012, 89)

Applying a similar thinking to A running through the museum challenges us, as researchers, in our understanding of his running as 'just moving'. Instead, the unfamiliarity of the museum space, and A's deep absorption in and attunement to being in and experiencing his body in this place, leads to certain kinds of thought in movement. Posthumanism can open up new possibilities for making sense of A's running in the museum, even when it happens without words, without interaction with adults, and without prior intentionality.

Repetition and rituals

T and the stairs:

> T has climbed the steps to get up to the tram entrance, and he spends some time pushing the brake lever back and forth. He descends the steps and once down his mum asks 'finished?'. T says 'NO' emphatically and climbs back on – this sequence is repeated a few times despite the steepness of the steps and he does not want a hand to steady him, although this is offered by his mum.
> Once T finally moves on from the steps his attention is immediately caught by a miniature tram model, which is encased in a large ground level glass case. Despite these steps being on a much smaller scale in relation to his body, his right leg moves up and forward in an attempt to approach the bottom step. His body-in-motion is abruptly halted when he comes into contact with the glass and he seems to judder in surprise.

This account of T's exploration of Streetlife Museum of Transport was also collected as part of the Humber Museums research study. Just as with J's ball of clay, the stairs seemed to call T into action. There was something about the quality of the steps in relation to T's moving body that *intra*-acted. Here, action is not understood:

> as a one-way street running from the actor to the acted upon, from the active to the passive or mind to matter, but as relational phenomena incessantly looping back and regulating itself through feedback phenomena such as proprioception, resistance, balance, rhythm, and time … . (Anderson and Harrison 2010, 7)

T is determined to repeat his actions a number of times, and this repetition is just one series of repetitions that T enacts each time he encounters stairs leading up into a bus/tram carriage. It is also worth knowing that T usually comes to the museum regularly and these stair rituals occur from week to week. What his mum calls 'his obsession with stairs', could lead us to see steps as becoming a ritual object, which when encountered by T, demand a particular series of actions. As a ritual object, the steps, produce what Manning would call a 'shift in register' (2016, 67). It is this that gives the everyday object a 'more-than' quality so that they become sites of 'anticipation', of 'memory' and of 'attunement' (2016, 72).

Rather than simply seeing the step climbing as a repetition that adds nothing more (except physical mastery), we could explore the way that ritual *activates* 'outside of systems of value imposed on it precisely because it is capable of inventing forms of value emergent from the ritual itself' (Manning 2016, 71). This sense of activation is so profound that when T encounters the miniature tram behind a glass pane, his legs move in anticipation of the steps. The steps have a vitality that usher the ritual actions. This means that carriage steps are always approached by T and his mum with a sense of anticipation, but this anticipation is produced through the affective memory of previous encounters with carriage steps. Once T and step come together, a shift in register takes place and climbing begins. The climbing expresses a deep sympathy between T and the step: T engages fully through moving his body with the form and quality of the step. The close attunement of T's body with the steps could be seen as a kind of 'thinking with steps'. In turn we would argue that T's Mum is tuning in to T's rituality, both by anticipating the encounters, but also by giving him the space to repeat his actions again and again.

Once T and his Mum leave the steps behind them, steps always remain as a memory site that can be re-visited in another step-encounter; each step-encounter thus becomes a holder of the remembered experience of past encounters. At the same time, each encounter is a new lived experience: in this sense ritual objects are like a 'time machine' (Manning 2016, 67) that operate outside 'systems of value imposed from outside' (68), and thus they have the potential to interrupt a pre-determined order of things, producing their own inventive and singular forms of knowing.

Discussion: posthuman children in museums and the implications for museum learning practice

When some of the most frequently observed ways in which young children behave in museums find no explanation within dominant models of children's learning in museums, multiple unresolved questions are left for museum practitioners, and the unique role museums play in the experiences of very young children remains vaguely articulated. Previous research studies on young children in museums show oblique relationships between museum collections and children's learning; for example, in Cook and Hess (2007) study children photographed themselves and their friends, rather than museum objects, and Dicks (2013) found the 'twin dimensions of the social and sensory' (301) factors eclipsed 'learning through doing' in a science museum. Simultaneously, these findings are set in a context of continuing anxieties around how infant-friendly museum activities can be clearly connected with unique museum objects (Blackwell 2009; Renaissance South West 2008).

Within an increasingly fast-paced and metric-oriented neoliberal education system, and pressures on schools to become ever-more accountable for their 'performance' through evidenced-based practices, museums are under extra pressure to serve political agendas tied to recognised forms of what constitutes tangible learning. When curriculum outcomes are measured at increasingly earlier ages, museums run the risk of becoming complicit in the production of evidence of learning and co-dependent on early years assessment regimes. This backdrop threatens to contribute further to anxieties about ensuring that children's learning in museums is clearly connected with the uniqueness of the museums and its collection.

Our analysis of Matilda and the sponges in the first part of this paper illustrates the way in which these tensions around aspects of museum practice bear the traces of the dominance of representation

and human-centrism in cognitive and social conceptual framings of children in museums. While we acknowledge that visitors (young children and the adults they come with) use prior knowledge and experiences in order to make sense of the museum, and make sense of collections, using talk as a way to express this, we also wish to recognise that museum visitors are not wholly autonomous subjects. Visitors are also deeply entangled with and co-exist alongside concepts and materials, so that all these things lose their clear boundaries. The possibilities for becoming entangled with different and unique kinds of objects, spaces, sensations, architectures, is, we argue, a large part of where we see the value in children visiting museums. This entanglement is an important part of the answer to 'what does that mean?' when children visit museums.

Through the lens of the cognitive and the socio-cultural child, our pieces of 'sticky data' have been tricky to make sense of. However, when viewed through an expanded posthuman theorising, meaning-making emerges from the embodied encounters of materials and place. As researchers, the 'sticky data' drew our attention to how meaning is itself sticky in the way that it can cling to objects and places in unpredictable ways. There is something about the 'thrown-togetherness' (Massey 2005) of the museum space: the kinds of buildings, the kinds of discourses, the kinds of objects, that opens up possibilities for unexpected connection-making and affective attachments to places and things. Olsson (2013) stresses the genuine creativity and productivity of young children, their 'longing for invention of the yet not known' (230). This kind of genuinely original thinking is 'Far away from already formulated questions with given and corresponding answers. Far away from already constructed problems with given and corresponding solutions' (230). Using a posthuman lens, our 'sticky data' yielded thinking in movement that was produced through the vibrancy of objects, and through rituals that were constituted within relationships of mutuality between human and non-human bodies.

As Deleuze points out, truly original thoughts are rare; most thinking involves going in circles over things already thought, so that 'to get an idea is like a party' (Deleuze, in Olsson 2013, 231). All too often, concrete objects are used as techniques of symbolic capture for educational purposes. Museums have long histories of 'interactive' strategies such as lifting flaps or pressing buttons, intended to enable children to learn certain things related to themes in museum collections. The danger here is that when museums deploy such strategies as an 'apparatus of capture' (Manning 2016, 32), the effect is that what counts as meaning and thought is narrowed and reduced to 'already formulated questions with given and corresponding answers'. Instead of asking how museum spaces could ensure certain kinds of educational outcomes, museums could be more attentive to how to create a space that anticipates and is sensitive the potential for emergent connections. When meaning is understood not as separate representations of the world, but as thought-in-action (Anderson and Harrison 2010), museums could place greater emphasis on the value of unexpected connections produced through human and non-human encounters. We would argue that it is within the intensities and forces of affect that qualitative, unpredictable, unscripted and inarticulate forms of learning occur.

Notes

1. Perry's large-scale tapestries weave the eccentricities and peculiarities associated with life in the UK, into a lively commentary on taste and class mobility. They chart the 'class' journey made by Tim Rakewell (from Hogarth's paintings 'A Rake's Progress') and include characters, events and objects Perry encountered on his journeys through Sunderland, Tunbridge Wells and The Cotswolds for the television series 'All in the Best Possible Taste with Grayson Perry' (see http://manchesterartgallery.org/exhibitions-and-events/exhibition/the-vanity-of-small-differences-2/).
2.

> The usual notion of interaction assumes there are individual independently existing entities or agents that preexist their acting upon one another … By contrast, the notion of 'intra-action' unsettles the metaphysics of individualism … 'individuals' do not preexist as such but rather materialize in intra-action. (Barad, cited in Kleinman, 2012, 77)

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References

Anderson, B., and P. Harrison. 2010. "The Promise of Non-Representational Theories." In *Taking-Place: Non-Representational Theories and Geography*, 1–36. Farnham: Ashgate.

Ash, D. 2003. "Dialogic Inquiry in Life Science Conversations of Family Groups in a Museum." *Journal of Research in Science Teaching* 40 (2): 138–162.

Badmington, N. 2011. "Posthumanism." In *Routledge Companion to Science and Literature*, edited by Rossini Bruce and Manuela Clarke. New York, NY: Routledge.

Barad, K. 2007. *Meeting the Universe Halfway: Quantum Physics and the Entanglement of Matter and Meaning*. London: Duke University Press.

Barad, K. 2014. "Diffracting Diffraction: Cutting Together-apart." *Parallax* 20 (3): 168–187.

Bennett, J. 2010. *Vibrant Matter: A Political Ecology of Things*. Durham: Duke University Press.

Blackwell, I. 2009. *Communication Friendly Museums, Potteries Museum and Art Gallery*. Ringwood: Learning Unlimited.

Burman, E. 2016. *Deconstructing Developmental Psychology*. London: Routledge.

Clarkin-Philips, J., M. Carr, R. Thomas, M. Waitai, and J. Lowe. 2013. "Stay Behind the Yellow Line: Young Children Constructing Knowledge from an Art Exhibition." *Curator: The Museum Journal* 56 (4): 407–420.

Conn, S. 1998. *Museums and American Intellectual Life. 1876–1926*. Chicago: Chicago University Press.

Cook, T., and E. Hess. 2007. "What the Camera Sees and from Whose Perspective" *Childhood (Copenhagen, Denmark)* 14 (1): 29–45.

Crowley, K., M. A. Callanan, J. L. Jipson, J. Galco, K. Topping, and J. Shrager. 2001. "Shared Scientific Thinking in Everyday Parent-child Activity." *Science Education* 85 (6): 712–732.

Dicks, B. 2013. "Interacting with … What? Exploring Children's Social and Sensory Practices in a Science Discovery Centre." *Ethnography and Education* 8 (3): 301–322.

Dooley, C. M., and M. M. Welch. 2014. "Nature of Interactions among Young Children and Adult Caregivers in a Children's Museum." *Early Childhood Education Journal* 42: 125–132.

Dudley, S. 2014. "What's in the Drawer." *The Senses and Society* 9 (3): 296–309.

Ellenbogen, K. M., J. L. Luke, and L. D. Dierking. 2004. "Family Learning Research in Museums: An Emerging Disciplinary Matrix?" *Science Education* 88 (1): 48–58.

Geoghegan, H., and A. Hess. 2015. "Object-love at the Science Museum: Cultural Geographies of Museum Storerooms." *Cultural Geographies* 22 (3): 445–465.

Hackett, A. with Yamada-Rice, D. and Centre for the Study of Childhood and Youth. 2016. *Creative Families Award End of Pilot Report*. Unpublished Evaluation for CapeUk.

Hein, G. 1998. *Learning in the Museum*. New York: Routledge.

Hooper-Greenhill, E. 2006. "Studying Visitors." In *A Companion to Museum Studies*, edited by S. Macdonald, 362–376. Oxford: Blackwell.

Hooper-Greenhill, E., ed. 1999. *The Educational Role of the Museum*. Leicester Readers in Museum Studies. London: Routledge.

Howes, D. 2014. "Introduction to Sensory Museology." *The Senses and Society* 9 (3): 259–267.

Hultman, K., and H. Lenz Taguchi. 2010. "Challenging Anthropocentric Analysis of Visual Data: A Relational Materialist Methodological Approach to Educational Research." *International Journal of Qualitative Studies in Education* 23 (5): 525–542.

Ingold, T. 2011. *Being Alive: Essays on Movement, Knowledge and Description*. New York: Routledge.

Ingold, T. 2013. *Making. Anthropology, Archaeology, Art and Architecture*. London: Routledge.

Jenks, C. 2005. *Culture*. London: Routledge.

Jones, L. and Holmes, R. 2014. "Evaluation of the Clore Art Studio: A Continuous Swirling Line, Vibrant Colour and Humble Objects." Unpublished Evaluation Manchester Metropolitan University for Manchester City Art Gallery.

Kirk, E. 2014. "Crystal Teeth and Skeleton Eggs: Snapshots of Young Children's Experiences in a Natural History Museum." Unpublished thesis.

Kleinman, A. 2012. "Intra-actions (Interview of Karen Barad by Adam Kleinman)." *Mousse* 34: 76–81.
Kramer, P. 2012. "Bodies, Rivers, Rocks and Trees: Meeting Agentic Materiality in Contemporary Outdoor Dance Practices." *Performance Research* 17 (4): 83–91.
Lather, P. 1998. "Critical Pedagogy and its Complicities: A Praxis of Stuck Places." *Educational Theory* 48: 487–497.
Leinhardt, G., and K. Knutson. 2004. *Listening in on Museum Conversations*. Oxford: Altamira Press.
Lenz Taguchi, H. 2009. *Going Beyond the Theory/Practice Divide in Early Childhood Education: Introducing an Intraactive Pedagogy*. New York,NY: Routledge.
MacLure, M. 2006. "The Bone in the Throat: Some Uncertain Thoughts on Baroque Method." *International Journal of Qualitative Studies in Education,* 19 (6): 729–745.
MacLure, M. 2011. "Qualitative Inquiry: Where are the Ruins?" *Qualitative Inquiry* 17 (10): 997–1005.
MacLure, M. 2013. "Researching Without Representation? Language and Materiality in Post-qualitative Methodology." *International Journal of Qualitative Studies in Education* 26 (6): 658–667.
MacRae, C. 2007. "Using Senses to Make Sense of Art: Young Children in Art Galleries." *Early Years* 27 (2): 159–170.
Manning, E. 2016. *The Minor Gesture*. London: Duke University Press.
Massey, D. 2005. *For Space*. London: Sage.
Massumi, B. 2011. *Semblance and Event: Activist Philosophy and the Occurrent Arts*. Cambridge: MIT Press.
McHoul, A. 1986. "Reading Piaget's Subject: Contradiction and the Discursive Politics of Genetic Structuralism." *Discourse* 7 (1): 98–115.
Morss, J. 1990. *The Biologising of Childhood: Developmental Psychology and the Darwinian Myth*. East Sussex: Lawrence Erlbaum.
Murris, K. 2016. *The Post-Human Child: Educational Transformation Through Philosophy with Picturebooks*. London: Routledge.
Nicolopoudou, A. 1993. "Play, Cognitive Development, and the Social World: Piaget, Vygotsky, and Beyond." *Human Development* 36: 1–23.
Olsson, L. 2009. *Movement and Experimentation in Young Children's Learning: Deleuze and Guattari in Early Childhood Education*. London: Routledge.
Olsson, L. M. 2013. "Taking Children's Questions Seriously: The Need for Creative Thought." *Global Studies of Childhood* 3 (3): 230–253.
Pacini-Ketchabaw, V., S. Kind, and L. Kocher. 2016. *Encounters with Materials in Early Childhood Education*. London: Routledge.
Paris, S., and S. Hapgood. 2002. "Children Learning with Objects in Informal Learning Environments." In *Perspectives on Object-Centered Learning in Museums*, edited by S. Paris, 37–54. London: Lawrence Erlbaum.
Piaget, J. 1962. *Play, Dreams, and Imitation in Childhood*. London: Routledge and Kegan Paul.
Piaget, J., and B. Inhelder. 1956. *The Child's Conception of Space*. London: Routledge and Kegan Paul.
Piscitelli, B., and D. Anderson. 2001. "Young Children's Perspectives of Museum Settings and Experiences." *Museum Management and Curatorship* 19 (3): 269–282.
Rautio, P. 2013. "Children who Carry Stones in Their Pockets: On Autotelic Material Practices in Everyday Life." *Children's Geographies* 11 (4): 394–408.
Renaissance South West. 2008. "Close encounters with culture." Museums and galleries as part of the Early Years Foundation Stage. MLA South West.
Sheets-Johnstone, M. 1981. "Thinking in Movement." *The Journal of Aesthetics and Art Criticism* 39 (4): 399–407.
Vygotsky, L. 1978. *Mind in Society. Development of Higher Psychological Processes*. Harvard: Harvard University Press.
Woodall, A. 2015. "Rummaging as a Strategy for Creative Thinking and Imaginative Engagement in Higher Education." In *Engaging the Senses: Object-based Learning in Higher Education*, edited by H. Chatterjee and L. Hannan, 133–155. Surrey: Ashgate.