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Mobilizing Digital Dexterity: Parental Mediation, YouTube's Networked Public,
and the Baby-iPad Encounter

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Abstract

This study collected a sample of YouTube videos in which parents recorded their young children utilizing mobile touchscreen devices. Focusing on the more frequently viewed and highly-discussed videos, the paper analyzes the ways in which babies' 'digital dexterity' is coded and understood in terms of contested notions of 'naturalness', and how the display of these capabilities is produced for a networked public. This reading of the 'baby-iPad encounter' helps expand existing scholarly concepts such as parental mediation and technology domestication. Recruiting several theoretical frameworks, the paper seeks to go beyond concerns of mobile devices and immobile children by analyzing children's digital dexterity not just as a kind of mobility, but also as a set of reciprocal *mobilizations* that work across domestic, virtual and publically networked spaces

Keywords: digital dexterity, parental mediation, mobilities, YouTube, young children, networked public

Mobilizing Digital Dexterity: Parental Mediation, YouTube's Networked Public and the Baby-iPad Encounter

Introduction and Background

In this study we set out to develop a sense of the emerging culture around young children's use of mobile devices by exploring the display, definition and debate around babies and toddlers using touchscreens within online networked publics. To do so, we adopted a form of digital ethnography, viewing and analyzing video content and associated comments threads on YouTube posts of babies and toddlers interacting with mobile devices and touchscreen interfaces. These gestural interfaces have popularized the emerging paradigm of technology interaction known as Natural User Interfaces (NUIs), which not only promise to remediate the ways children interact with computers, but also reshape children's media culture. These transformations are often conceptualized in terms of mobility: the new, mobile media versus the old sedentary variety. These debates also intersect with the health and development-related concerns about children's bodily mobility.

This research is part of a larger and ongoing project with young children, exploring household routines and geographies of mobile device use from an ethnographic and child-oriented perspective. The aim of this study of online video sharing is to situate such domestic media use within broader cultural, material and discursive contexts. We describe these entangled dynamics through the concept of children's *digital dexterity*, which we argue is a useful term for thinking about the ways children's interaction with gestural devices requires physical skill in using their hands or bodies to navigate – that is, to mobilize the device's component elements and organize it as a 'text'. Yet, such

dexterity is not a purely physical or bodily capacity, but distributed through a diversity of *digital* relations in the ways technologies are imagined, encountered and mobilized.

Studies of digital technologies in the lives of teenagers and adolescents are well established, yet research on digital media use by very young children, aged from zero to five, is only recently emerging. This is, in part, a consequence of young children's historically limited engagement with, or capacity to use, desktop computers and their associated interfaces. However, trends towards mobile touchscreen devices within domestic spaces are challenging these historical conditions. Recent research is documenting these trends through surveys of mobile device use by babies and toddlers, highlighting the growing importance of studying younger children's everyday media use (Commonsense 2013; Ofcom 2013; Wartella et al. 2013). Yet, there is a clear need to complement such statistical data with more qualitative, ethnographic and theoretical research on the experiences, meanings and values associated with mobile device use by young children (e.g. Giddings 2007).

Further, research on how parents mediate their children's media use has to date largely focused on interactions within households, and on traditional screen media such as televisions, though more recently researchers have focused on the internet and game consoles (e.g. Aarsand and Aronsson 2009; Livingstone and Helsper 2008; Nikken and Jansz 2006; Valcke et al. 2010). Given children's increasing engagement with mobile media, there is clearly a need to extend this area of research to consider parenting around mobile media (e.g. Wartella et al. 2013); children's software, alongside hardware, within the mobile app economy (Chiong and Shuler 2010); and the online contexts in which parental mediation and discursive formations of children unfold.

In this paper, we aim to address such online practices and discourses by analyzing videos and discussions of babies and touchscreens on YouTube, and by developing the

concept of children's digital dexterity. This concept is teased out through the themes of imagination, encounter and mobilization, which map onto three broad areas of academic interest in technology use.

Firstly, how media are *imagined* is situated in relation to interface studies, debates about the naturalness of NUIs (e.g. Norman 2010; Widgor and Wixon 2011), and how these mobile media and gestural interfaces influence children's play, education and development (e.g. Buckleitner 2011; Hourcade et al. 2015; Selwyn et al. 2009; Plowman et al. 2008). Secondly, children's *encounters* with touchscreen devices are contextualized within the longer history of technology domestication within the home (e.g. Shepherd et al. 2007; Silverstone and Hirsch 1992; Silverstone and Haddon 1996). This approach is useful in accounting for the household accumulation of devices and concomitant new relationships to media, as well as the ways they are imbricated in wider social, economic and cultural contexts (Tacchi 2006). We explore these contexts by analyzing the sociotechnical construction of YouTube videos of babies using iPads. Thirdly, the *mobilization* of children's touchscreen device use is considered in reference to the work of, and research on, parental mediation, as well as embodiment in parent-child relations (e.g. Nikken and Jansz 2006; Lupton 2013). We extend this research in terms of the role parental remediation of their own childhood media experiences – or 'prolepsis' – plays in dialogue with issues of 'interembodiment' (Lupton 2013) between parents, children and mobile devices in mobilizing interactive media use.

Taken together, our analysis of the YouTube videos through the themes of imagination, encounter and mobilization organize this paper's intervention in a series of debates surrounding child-oriented media research. Drawing on traditions such as critical theory, actor-network theory, game studies, phenomenology, and theories of

domestication, we present a series of viewpoints in which bodily mobility is not seen in isolated terms, but also as part of a network of reciprocal *mobilizations*.

Methodology

The method we adopted was a qualitative content analysis (Ackland 2013) relevant to the self-produced video, as well as analysis of the ‘asynchronous online discussion’ (Thelwall and Sud 2012) of the associated comment threads, combined with critical theory analysis (Blythe and Cairns 2009). This use of digital data can be characterized as a form of unobtrusive digital ethnography (Hine 2015; Horst et al. 2012), in that it gathers online traces of everyday life, considers the cultural context, and theorizes their entanglements with an online video platform.

Sample collection in a dynamic archive on a video-sharing site such as YouTube faces specific methodological problems (e.g. Sampson et al. 2013). Some major issues include the heightened propensity of the archive to change compared to traditional records or sources (YouTube is particularly subject to ‘decay’ and ‘modification’), the vagaries of utilizing a proprietary search engine (which may skew results in ways unintended by researchers), and the question of whether or not to ‘snowball’ results (iterate a search procedure based on previously retrieved results) in constructing the sample. The dynamism of the YouTube archive and the vagaries of comment systems and search engines were forcefully affirmed when, shortly after this study’s sample was taken, the site introduced a new commenting regime that integrated with the Google+ social network.

Researchers must be mindful of these issues when investigating sites like YouTube. However, this article is oriented to the qualitative and critical analysis of videos and comments that have been highly viewed and extensively discussed – not to

establish ‘construct validity’ (Ackland 2013) between online behavior and other social contexts, which may well necessitate the use of specialized computer-aided techniques and the construction of a census or random sample. For our purposes, then, the native YouTube search is an appropriate tool given the search function is an important factor driving the high popularity (and hence lively comment sections) of such videos (Burgess and Green 2009), and is thus pivotal in producing the very ‘flows of information and attention’ (Ackland 2013) that we are interested in analyzing.

Our sample was collected by submitting the search terms “iPad Toddler” and “iPad Baby” to YouTube’s proprietary search engine on November 3rd, 2013. The search returned ‘about 1020000 results’, many of which – such as a video suggesting the use of baby wipes to clean iPad screens or advertisements for apps developed for young children – were only tangentially related to the research question. Searches for more general terms such as “Touchscreen Toddler” or “Tablet Baby” tended to return overlapping results, however, and tended to turn up professionally produced videos (advertising for apps or toys designed for small children, news reports) rather than the self-produced videos we were seeking to analyze.

The results were then filtered by View Count. Once sorted for View Count, the videos were sequentially screened and self-produced videos that involved a familial or domestic setting selected. A small set of videos had an extremely large number of views, such as “A Magazine is an iPad That Does Not Work” (4305127 views), “Baby Works iPad Perfectly. Amazing Must Watch!” (1231077 views) and “9 Month Old Baby Using iPad” (260187 views). The view counts for all but the top ten or so relevant videos returned by the search drop precipitously, conforming to social media research that suggests the operation of a ‘Zipf law’ whereby the ‘size of objects is in a power law relation to its rank’ (Blythe and Cairns 2009, 3; see also Ackland 2013). The comment

sections of these videos (which could run to the thousands) were recorded as screenshots up to 5 pages, with ‘Top Comments’ noted. Spot checks made further down the comment threads indicated that the Zipf law was in operation: certain ‘genres’ of both video and comment were identified as highly common throughout the sample.

In collecting the whole sample as part of the larger research project investigating toddlers and touchscreens, an ancillary research question arose concerning the two most popular videos and their associated comment threads: “A Magazine is an iPad That Does Not Work” (hereafter ‘Video A’) and “Baby Works iPad Perfectly. Amazing Must Watch!” (hereafter ‘Video B’). The outlier view and comment counts of these videos seemed worthy of further study as they form a considerable corpus in their own right. From our preliminary analysis of the sample, this popularity seemed to be related to discursive contests concerning the ‘naturalness’ of the digital dexterity that was on display. In this paper we supplement the search findings with critical theory and cultural studies methods in order to focus in on Videos A and B as well as their respective comment threads. These methods will help to understand the construction of the videos, the liveliness of the conversation surrounding them, and the discursive-material patterns they exhibit around the ‘baby-iPad encounter’.

Media Imagination, ‘Naturalness’, and Children’s Digital Dexterity

The videos that had the most views in the sample tended to have two traits: they were uploaded around the launch of the original iPad in 2010, and have titles that assert a value judgment about relations between very young children and technology.

Competing ideas about children and gestural technologies were often centered on how *naturalness* was understood, or where in this relationship naturalness was located (either in the baby as a prediscursive being, or the iPad’s intuitive design as a mobile

touchscreen device). The most viewed and discussed video in the sample was Video A. This video presents footage of a baby girl using an iPad (taken by the baby's father), which was then contrasted with her manipulating the pages of a magazine. The edited footage and suggestive intertitles make the argument that the baby was disappointed or unengaged by older media due to the absence of a 'natural' interface with responsive or interactive characteristics. The uploader, who goes by the username 'UserExperiencesWorks', makes a somewhat hagiographic claim in the video's summary: 'Technology codes our minds, changes our OS. The video shows how magazines are now useless and impossible to understand, for digital natives... Humble tribute to Steve Jobs, by the most important person: a baby'.

UserExperiencesWorks' use of repeated short snippets of footage, cut with intertitles replete with rhetorical flourishes, is aimed at more than a simple documentary approach to the design qualities or usability of a natural user interface. Instead, the construction of the video is such that a claim is being made against the 'naturalness' of the NUI form. The young child, who may typically symbolize an unmediated and pre-cultural way of being in the world, is instead presented as already 'programmed'. Her 'operating system' has been coded by her interactions with the iPad to the degree that legacy print technology represented by the magazine is 'impossible to understand'. The video seeks to convince viewers that a shift is taking place between two historical media periods through a touchscreen whose interface is 'moveable' by a baby, and which is mobile enough to come 'down' to her level – distinguishing it from the traditional distribution of devices in the domestic space.

This theme is also played out in Video B, in which the father presents his son as a precocious and enthusiastic user of the technology. Many of the comments to these videos speak approvingly or with wonder at children as 'digital natives' whose

readiness for a digital future is characterized by the need for such dexterous interactions: as one commenter opined, ‘Apple would do well to hire a child who had displayed such aptitude at an early age’ (Video B). In documenting skillful device use, the video indicates a new kind of digital intelligence and a correlative shift from traditional to digital literacies.

However, the theme of an altered or reconfigured nature is in tension with another implicit idea of nature or naturalness at work in these videos: the primacy and naturalness of gesture and the concomitant ‘intuitiveness’ of the interface. The iPad’s design, touted both by marketers and the product’s devotees as a paradigmatic NUI, utilizes a gestural language inherent to the human being – or at least, one that is more natural than linguistic competencies. This trope plays out in the comments section of Video B: ‘This proves what an amazing and intuitive interface and experience can do for a platform!’ This reaction to the video works in the opposite way to the former: the gestural device is particularly well designed in light of ‘natural’ human capacities and tendencies: even a child can use it without being ‘programmed’.

These generally positive comments are balanced by negative or disapproving messages. While many of these are expressions of distaste for the iPad as a device or the Apple brand, there is a more interesting set of responses with regard to the concept of children’s digital dexterity: some commentators express unease or misgivings about the use of technology by young children, and they accordingly tend to place this usage in a retrograde relation to normative ideas of childhood and education.

Here the shift from traditional to digital literacies was often seen as problematic: naturalness and intuitiveness are conceived in a diametrically opposite sense to those above. The child, as a ‘natural’ being in a state of innocence, should not be exposed to the deleterious effects of technology – which are often expressed as a kind of

entrapment or limiting of a 'natural' childhood mobility. On the other hand, the videos' exhibition of digital dexterity in navigating a gestural interface is seen as actively deleterious to the child's capacities for acquiring text-based or conventional media literacies (e.g. Penman and Turnbull 2007). Commenters often expressed concern about children being too young to use an iPad: 'He's entering the age of the digital cage early... Give that kid a book!' (JoeyNitro). This sometimes leads to accusations of bad parenting on the part of the video uploaders: 'Too many parents are using ipad/smart phones to keep their kids busy, rather than interacting with them in the old fashioned way. Yeah, I'm sure technology will come into play at some stage of development, but at this age?' (80Chile).

These videos, which document device interactions for a population of users largely external to the original parameters of its design, inevitably leads to debates around naturalness in terms of appropriateness or impact of the technology on children and their development. Indeed, many of the debates echo those that are currently ongoing in academic circles surrounding the relations between young children and technology. For example, the issue of 'developmental appropriateness', which involves considerations of the age at which children should be exposed to specific technologies or media (e.g. Vandewater et al. 2007; Zevenbergen and Logan 2008), are reflected in the debates about whether the children are too young to be using the iPad. The 'natural' developmental stage of the child is a measure for when – and under what conditions – the technological object can become part of their world. Similarly, much of the academic work surrounding the relation between young children and technology has come from an education context and involves speculation as to the implications of digital devices and digital dexterity for pedagogy and policy (e.g. Selwyn et al. 2009; Plowman et al. 2008). Certain perceptions around the impact of nature versus nurture in

child development are implicit in the notion of the ‘digital native’ (Bennett et al. 2008; Selwyn 2009; McPake and Plowman 2010) and are advanced as explicit design goals in NUI research and industrial design.

Where this scholarship often takes an explicitly pedagogical stance and hence tends to view the relation between young children and technology in the normative framework of the eventual subject that the child is supposed to become (a productive member of society, or at least one educationally and developmentally equipped to deal with the rigors of modern technological life), other perspectives seek to disturb categories such as ‘naturalness’ or ‘intuitiveness’ in which terms the videos are often read. Practitioners such as Bill Buxton (2007) and researchers like Don Norman (2010) have challenged such assumptions. Norman argues that the NUI or gesture-based interactivity of the iPad is neither new (he mentions the Theremin, patented in 1928, as one of several forerunner devices) nor as apodictic as its proponents claim (‘Even the simple headshake is puzzling when cultures intermix’ (Norman 2010, online)). Such historicizing accounts seek to place the NUI within a developmental trajectory of various and competing grammars.

The very goal of an easy-to-use gestural interface (and of interfaces in general) has been criticized for reducing the need for users to deal directly with the machine’s workings. In this way such technologies more tightly enmesh users within the codes and protocols of corporate command and control. Teacher Marc Scott (2013) has gone so far as to argue – contra ‘digital native’ discourses – that ‘kids can’t use computers’. Instead, they learn only the relatively shallow layer of apps and interfaces – recalling Friedrich Kittler’s argument in ‘Protected Mode’ (1997). In these discussions, the interface itself is certainly involved in ‘programming’ users insofar as it inculcates their use of a truncated repertoire of procedures and actions.

Whilst the imagined qualities of naturalness – whether of the interface or the child – tend to dominate representations and comments in this video-sharing culture, we propose these YouTube videos be examined as *encounters* between young children and the media that assemble around them. This encounter is part of a complex set of relations. In the case of the YouTube videos, we detect the mediating role of parents, the type of recording device and the architecture of the YouTube platform. This sociotechnical assemblage in the production, distribution and consumption of videos that exhibit the encounter are, therefore, constructed as part of a domestic screen ecology in which processes of device *domestication* (e.g. Blythe and Monk 2009; Haddon 2011; Nansen et al. 2011) and forms of *parental mediation* (e.g. Nikken and Jansz 2006; Aarsand and Aronsson 2009; Livingstone 2009; McPake and Plowman 2010) shape how children's digital dexterity is defined and displayed.

Media Domestication and Baby-iPad Encounters

How do the videos in what could be termed the 'baby-iPad encounter' genre compare to other, more well-established and researched genres of user-generated content such as the candid direct-to-camera confessional (Burgess and Green 2009); the vlog and the conversational vlog (Biel and Gatica-Perez 2012); the unboxing video (Blythe and Cairns 2009); the 'how-to' (such as the makeup tutorial video (Hall et al. 2012)); and so on? These vernacular genres involve varying techniques of construction and professionalism, various manipulations of equipment (most commonly the mobile or smartphone camera) and the participation of differing groups of people. The baby-iPad videos are often described by their uploaders as recordings of natural, unmediated digital dexterity, and they often display vernacular signifiers of immediacy (shaky camera work, close-up angles, domestic quotidian settings, incidental lighting, young

children as subjects, unedited sound and footage). The mobility and accessibility afforded by phone cameras is a crucial element of these videos because of its integration into the domestic and quotidian flows of home life in which very young children are enmeshed.

However, this sense of ‘natural’ dexterity is itself *produced* through various techniques that often involve or imply the elision of the recording apparatus itself. Késenne (2010) has examined how a sense of immediacy is constructed in two video productions of a rock concert in South America. She contrasts the vernacular video recorded by fans from mobile phone and digital camera devices within the crowd and then uploaded to YouTube – raw, dispersed, grainy – to the extreme proximity of the professional crew hired to create a three-dimensional IMAX spectacle through an elaborate technical array or ‘multi-camera set-up’: ‘36 HD cameras, operated by 18 CCUs with two technocranes, two jibarms and a spidercam for sweeping movements through space’ (Késenne 2010, 82). Meanwhile, this apparatus and the performers are in contact with a producer who guides their movements relative to one another and in this way ‘literally talks the show into existence’. Both video series signify ‘real-time’ embodied presence and immersive spectacle, but their immediacy is produced through very different technical ensembles, productive standards, and aesthetic sensibilities.

Késenne’s example traces the production of two very different sensations of presence and naturalness in two distinct videos: the different mobilities of the professional apparatus and the fans’ innumerable phone cameras. Similar attentiveness should be brought to the study of the encounter between YouTube, young children and the iPad, parents, and the domestic setting. While the domestic scenes of these videos obviously involve far fewer cameras than either rock concert video, close examination shows a complex set of actants and assemblages (Latour 2002). Késenne shows how

YouTube video requires rethinking how the moments of shooting, editing and distribution – typically staggered in the production of conventional moving images – enter into new relations (2010). The two major videos that have been examined in this paper recapitulate Késenne’s examples in an interesting fashion. Video A is constructed through editing techniques around short segments of footage of the child interacting with an iPad and a magazine that are edited together with text frames in order to form a suggestive presentation – as if the meaning of the video is self-evident. Conversely, Video B is shot in a continuous fashion, with the father moving around and advising as he records the video, reassuring or cajoling the child.

These diametrically opposed tactics for producing the sense of immediacy can only be manufactured as a result of the historical, steady and aggregated domestication of viewing, recording and editing technologies in the home – from the television and VCR, to the camcorder and personal computer, to the mobile and touchscreen device, and the wealth of accompanying software programs and applications. By the time these videos were taken the availability and routine use of the smartphone as a recording device had itself become domesticated (Silverstone and Hirsch 1994) and to some degree habitual and taken for granted. Domestication research, which draws on a legacy of the work of sociologists such as Goffman (1959) – provides a promising conceptual framework for thinking through the adoption, appropriation, and meaning of media and communication technologies in the home and has significant resonances for discussions of technology in the lives of young children. In this view, the domestic space is not conceived of in terms of static limits but as a site or locus in which devices “are ‘tamed’ in different ways at different times, reflecting both technological and personal change” (Haddon 2011): a process of mobility by which technology gradually moves into the domestic space.

What we see in the baby-iPad encounter genre of YouTube videos, then, are acute instances of domestication-as-process. One domesticated assemblage (the camera phone, the YouTube upload and the asynchronous comment threads) is used to surveil another at a time when it is not yet fully domesticated (the baby interacting with an iPad). The concept of domestication can help us understand the invisibility of the camera phone device to the debates occurring in the comments: as part of a more advanced process of domestication, the camera phone's proximity to the child is less likely to be seen as a matter of concern. Similarly, the precipitous decline in views of all but a small set of early videos in the genre reflects the increasing domestication of iPads, touchscreens and gestural technologies. While the event of a baby using an iPad may have less power of fascination over viewers, the exact *meaning* of the event remains open to debate – the related phenomena of fewer views but still-lively comment threads in the original videos operate within this ongoing process of domestication.

The notion of domestication-as-process connects children's use of touchscreen devices with debates surrounding playful media such as games (which were themselves subject to a storied process of domestication, moving from public arcades into private homes). However, where touchscreen devices are mobile throughout the domestic space, traditional gaming devices such as consoles and computers tend to occupy fixed locations. Here the baby-iPad encounter connects with the concerns of the field of game studies and, in particular, debates concerning the concept of the 'magic circle'. This term was introduced to game studies by Salen and Zimmerman (2003), drawing from Huizinga's *Homo Ludens: A Study of the Play Element in Culture* (1971), and refers to a conceptualisation of play as a distinct rule-bound space that is clearly demarcated from the outside world. However, where this may seem intuitively true with regards to game consoles or personal computers, iPad play is integrally related to the mobility of the

device around the domestic (or other) space. The iPad is less likely to be ‘put away’ or located inconspicuously until it is needed for play (Aarsand and Aronsson 2009), and more likely to enmesh itself in everyday flows. Furthermore, where the magic circle theory implies a ‘contractual’ model in which subjects knowingly enter and exit the space of play, this conceptualization is difficult to sustain in the case of very young children, for whom any object is liable to be picked up and used for play (a point made famously in Gombrich’s ‘Meditations on a Hobby Horse’ (1994)).

The baby-iPad encounter videos thus accord with the ways that the magic circle concept has come under sustained critique within the field of game studies (Nansen 2009; Calleja 2010; Jayemanne 2010; Lehdonvirta 2010), particularly from the perspective of ethnographic analysis of how people actually play games in everyday and social contexts (e.g. Nansen et al. 2012; Pargman and Jakobsson 2008). The baby-iPad encounter videos fundamentally challenge the magic circle concept. Clearly, these videos record playful behaviours. However, the presuppositions of a delimited space of play space cannot explain either Video A or B.

Parental Mediation and Mobilizing Media for Networked Publics

We will now turn specifically to the way that these videos challenge notions of parental mediation through three concepts: the networked public, prolepsis and interembodiment. We focused on two videos, each taken by a parent – rather than, say, a family friend, grandparent, sibling or other close relative. Many of the videos feature an ostensibly hands-off style in which the camera is positioned to observe the child’s activities from a distance. However, the highly-viewed and commented-upon videos demonstrate a more ‘active mediation’ (Nikken and Jansz 2006), in which parents are engaged participants in governing their child’s technology use – as opposed to other styles of parental mediation such as restrictive rule-based or co-viewing/playing forms

(e.g. Nikken and Jansz 2006). In the context of online video sharing, parental mediation must be analyzed in relation to the ‘networked public’: the YouTube audience for which the baby-iPad encounter video is *produced* through various techniques and assemblages. Video A, for example, has obviously been crafted through postproduction techniques in order to make an argument about the significance of the encounter and computational entanglement of child and touchscreen. Yet it is very difficult to glean much information about the baby’s extended interactions with the iPad given that the published footage has been so extensively produced and edited. This is ‘parental mediation’, though less in terms of governing access to media, and more as an act of *producing* the networked public around the baby-iPad encounter.

The most instructive video with regards to the distributed production of digital dexterity is Video B, in which the camera-holding father prompts his son’s interactions with the device. In comparison with the ‘unboxing’ videos examined by Blythe and Cairns (2009), or the conversational vlog type video with its typical ‘view-to-camera’ setup, or the post-production techniques of Video A, the baby-iPad encounter is ‘produced’ by the father even as he claims that his son possesses the digital dexterity to work the device ‘perfectly’ – that is, an ability to mobilize and navigate the virtual space afforded by the device. Acting like Késenne’s professional concert producer who is wired to both camera crew and performers, the father in Video B ‘talks’ the child’s supposedly spontaneous interactions into a form that is consumable by the YouTube networked public. While it is self-evident that parents play a decisive role in determining which technologies are available to their children (especially babies), the construction of these videos considerably complicates this conception of parental mediation. “UserExperienceWorks” may seem to have uploaded the more overtly ‘produced’ video through the use of editing and intertitles, yet Video B is also produced

in its own way – albeit in such a way as to give a sense of immediacy.

Rather than simply regulating children's use of media within the home in terms of *access* to the technology, then, the YouTube clips show parents mediating this access for presentation to YouTube's networked public. They are thus *constructing* their child's experience even as they record it – whether in the immediate sense of coaching their interactions as in Video B or for the benefit of a specific argument as in the highly-edited Video A – only to subsequently claim that the value of their video lies in its neutral viewpoint of an event or encounter. Interestingly, Nikken and Jansz's (2006) study of parental mediation in children's gaming found that mothers were the most involved parent, whereas the YouTube videos under discussion here reveal a significant gendered difference with fathers operating as the main protagonist in mobilizing perspectives on digital dexterity and novel NUI devices.

The videos also add a new dimension to the concept of *prolepsis* that McPake and Plowman (2010) draw from Cole's discussion in *Cultural Psychology* (1996). Prolepsis refers to 'a key influence on parent's interactions with their children deriving from the projection of their memories of their own idealized past into the children's futures' (McPake and Plowman 2010, 1), and plays a structuring role in the domestic reception of technologies:

Parent's assumptions, values, and expectations are influenced by their past experiences, enacted in the present, and are then carried by their children into the future as they move from home to formal education... prolepsis has a powerful explanatory force for understanding the kinds of decisions parents make about activities such as the extent to which parents engage in technological play. (McPake and Plowman 2010, 1)

Prolepsis is a powerful influence on how children encounter technologies: McPake and Plowman, studying families in central Scotland with children from 3-5 years of age, found that parents' comfort with media technologies was a more important predictor of their availability in the home than factors such as socioeconomic status (which are indicated by traditional 'digital divide' theories).

In the comments sections of the YouTube videos, prolepsis manifests not as a single process of governance – how devices and children encounter each other – so much as the site of multiple processes of rationalization and self-affirmation. Prolepsis is encoded in titles such as Video B: the video purports to be both natural *and* spectacular (“Must Watch!”) precisely because a received parental attitude to technology is being projected onto the baby-iPad encounter. The resulting video and the ensuing comment threads are a more distributed form of prolepsis in which parents do not restrict these views to their own children but publicly extend them to others' children and domestic spaces.

Prolepsis can also be seen in the way that each father positions himself in relation to the baby-iPad encounter. In Video A, UserExperienceWorks explicitly projects his own media experience onto the activities of his daughter, viewing these activities as proof of the intuitiveness of the touchscreen format. The highly enmeshed interactions of father, baby and iPad in Video B trace an almost opposite proleptic process: the baby is said to be extremely capable because he is capable of using a device designed for grownups. In each video, the fathers frame the footage in terms of their own experiences with technology.

As noted, Video B involves a father coaching his child's interactions for the benefit of the networked public – but it is also possible to observe in this video a closely

enmeshed *embodied* relation between the father's positioning and the child's involvement with the iPad. This raises the concept of 'interembodiment' as developed by Lupton (2013), drawing on phenomenological perspectives in Merleau-Ponty. 'Interembodiment' designates the intensity of relations between child and parent bodies through the example of infant and caregiver-relations in which conventional notions of the autonomous adult (in particular, maternal) body may recede or be challenged:

Merleau-Ponty sees the intercorporeal nature of the mother-child relationship as a primary example of the doubling, overlapping and two-sided nature of human embodiment. Through touching-being touched, moving-being moved, feeling-being felt, hearing-being heard, the bodies of mother and infant come close, or bend to each other, and then spread away from one another. The concept of 'infant' and 'mother' each defines and is inseparable from the other... (Lupton 2013, 40).

The 'baby-iPad encounter' videos tend to deal with children who are slightly older than Lupton's newborns, but they do prompt the question of embodied parent-child relations and what happens when a third actant, the mobile touchscreen device, is introduced to the ongoing process of interembodiment – what could be termed 'mediated interembodiment'. While less intense than the mother-child relationship described by Lupton, the concept of interembodiment can be modified here to designate the communicative circuit between parent, child and mobile touchscreen device. This helps to capture the parent's mediating role in producing understandings of their child's digital dexterity without falling into the double bind of ascribing 'naturalness' to either child or interface.

The video "iPad 2 vs. baby toy", for example, shows a baby girl seated with the

iPad as just one object amidst the many in the domestic setting – a very different arrangement than the specular focus provided by a TV. Her parents have placed a barnhouse toy nearby and the girl plays for a while with the iPad (as well as with the various pets, a kitten and a dog, who wander through the scene). After a cut, the girl's father is shown demonstrating a colourful app to the child. Another cut shows the child with the iPad and the barnhouse toy moved next to her. She loses interest in the iPad and takes up the toy, after which the message 'Save yourself \$480 and get your baby the barnhouse'. Here the *mobility* of both the infant and the tablet are crucial, set off against the static parent-and-camera: infants who could not sit still or reach the apparatuses needed to operate a PC or a game console are often shown seated with the iPad in their lap or on the floor in front of them. The stage has been set for the performance of digital dexterity to play out.

Another example of mediated interembodiment is evident in videos such as Video B and "2-Year Old Kid playing new Apple iPad", in which the fathers are involved in both active mediation and co-play as they record their children's gestural activity with the touchscreen device. However, because of the children's young age and language capabilities, direct instruction generally proves difficult. Instead, the fathers cajole and suggest in their attempts to guide the gestures of the child without obviating their contention that it is the child that has agency: the device and its gestural apparatus actively create a distance between father and child which has to be carefully mediated. The parental mediation involves verbally reinforcing positive outcomes and suggesting or pointing to apps for the child to use. In Video B the father asks his son to 'Draw us a picture,' to which suggestion the child at first seems reluctant or unresponsive. Upon repeat, the child says 'OK!' and then navigates through the apps to find one designed for children's drawing. The father prompts again 'Why don't you draw a squiggly line?

You're so smart...'. When the child seems to be at an impasse as to which animal to choose from a list, the father prompts again 'There are some other animals? Why don't you pick another animal?' Some subtle prompting also comes from the mother, and both parents remain off-screen, so that the frame remains squarely on the baby and their device dexterity.

A key component of the digital dexterity that the parents in Video B wish to display is the child's ability not to use only the one application, but to also navigate between multiple applications. However, the father is clearly reaffirming habitual activities. This can be seen when the child plays a video and begins scrolling forward. 'You're looking for the monkey part, aren't you?' the father asks. 'You're looking for your favorite part.' The child is re-visiting and rehearsing patterns of behavior that in turn are dependent upon the *parent's* configuration of the device. In this sense the parental mediation of the child's activity is implicit in the setup of the device and the user interface itself (its content, the arrangement of the app icons, the various settings) and constitutes a tactile kind of interembodiment.

Thus, in addition to the mobility of both the infant and the tablet in the ways different bodies are positioned and oriented, we see choreographies of *mobilization* in the interactions between parents, children and devices. This has two aspects: first, the interaction is produced as a display of digital dexterity for a YouTube audience. Second, there is a relation of interembodiment between the child's iPad encounter, the closeness and cajoling of the parent, and the parent's setup of the interface, apps and programs that structure the virtual space of the device. Here, child bodies hunch over the focal device whilst parent bodies hover above and circulate around, instructing and gesticulating as they prompt the child's gestures. The mobile interface operates through physical touch, and thus occupies an intermediate position within the assembled,

intimate and embodied relations between parent and child.

Conclusion

This study explored the emerging culture around young children's use of mobile devices through examination of the ways these relations are publicly displayed, defined and debated through video sharing and networked publics on YouTube. We found that these videos render visible relations beyond those to which they purport to represent. To better understand these relations, we examined the cultural, material and discursive construction of these videos. Drawing on literature from media studies, education, and game studies, we argued that the concept of digital dexterity is useful for thinking about how children's use of mobile and touchscreen media are produced. The videos explored in this article have led us to challenge and re-frame several key concepts drawn from media, education and youth studies (such as prolepsis, interembodiment, and parental mediation) and suggest avenues for further discussion of the issues they raise. They show that dexterity is not about simply the physical skill to navigate media interfaces; instead, dexterity exceeds the individual body and understandings of parental mediation that center on governance and control of access.

Thus, digital dexterity is a kind of mobility that must be thought of as an encounter involving a constellation of actants, both human and non-human; a distribution of agencies involving diverse digital relations in the ways media are imagined, encountered and mobilized. The videos discussed here show both human and technological actors that are ambiguous rather than discrete – hence the competing claims to 'naturalness' made by both the uploaders and those commenting on the videos, whether that naturalness is attributed to the infant or the interface. By critically reading these ambiguities through various themes of academic scholarship in children's

media, we can see that the baby-iPad videos are not simply quotidian encounters but cultivated forms of performance that configure fingers, limbs and bodies. These capacities are acquired over time through repeated interaction, reinforcement and guidance, and through the domestication of devices, the mediation of parents and intensive relations of interembodiment.

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