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Twinkle, twitter little stars: Tensions and flows in interpreting social constructions of the techno-toddler

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Abstract

In this article, the authors examine affordances and limitations of two interpretive frames—nexus of practice (Scollon, 2001) and the rhizome (Deleuze & Guattari, 1987)—for understanding the social construction of young children as precocious users of digital technologies. Building on recent work in literacy studies that challenges fixed understandings of space and context, particularly with respect to literacy practices using digital media, they argue that interpretive approaches to understanding young children’s participatory online literacy practices must seek to understand converging discourses and practices, but also divergence. These arguments are illustrated through nexus analysis and rhizoanalysis of a parent-produced YouTube video of a toddler who operates a computer to browse online nursery rhymes.

Keywords: digital media, discourses of childhood, early childhood literacy, literacy and identity, rhizoanalysis, nexus analysis

Introduction

For decades now, literacy researchers have grappled with issues of interpretation and method—how we document and expand our understandings of literacy and literacy teaching (Kamberelis & Dimitriadis, 2004; Tierney, 1992). While questions around interpretation and analysis have been with the field for some time, shifting and proliferating media have prompted literacy researchers to revisit and recontextualise these questions. More specifically, a number of literacy researchers have argued that the theoretical and analytical tools used to understand practices involving traditional print literacies are insufficient for understanding digital and multimedia literacy practices (Lankshear & Knobel, 2003; Labbo, 1996; Merchant, 2007; Moje, 2009). Many of these arguments invoke metaphors of space or geography, and/or are grounded in spatial theories of social practice. Vasudevan (2010, p. 62), for example, suggests that “temporality and synchronicity of identity performances have given way to multi-spatial and cross-temporal representations of the self”, articulating the need for researchers to attend to “digital geographies.” Along similar lines, Hagood (2009) invites educators to map out new “travel plans” for literacy research and teaching. Specifically, she argues for “connecting and converging theories” (p. 39) to understand how children construct knowledge about how new media work while simultaneously engaging the social practices and identities needed to participate in digital cultures through these texts. Importantly, however, we might also explore how different interpretive frames can help us see and understand divergences in literacy practices (Handsfield, 2007; Tierney, 1992).

In this article, we examine the affordances and limitations of two interpretive frames that build on spatial understandings of social practice—nexus of practice (Scollon, 2001)

and the rhizome (Deleuze & Guattari, 1987)—for understanding the social construction of young children as users of digital technologies. In doing so, we explore how we might use “connecting and converging theories” to map out new “travel plans” (Hagood, 2009) for literacy research and practice. Few studies have coupled rhizoanalysis with other analytical methods or explored how a rhizoanalytic lens might be coupled with other interpretive frames to theorise practice (See Handsfield, 2007 for one exception). We analyse a parent-produced YouTube video of a toddler browsing online using the theoretical constructs of nexus and rhizome to see how these approaches might be combined to inform interpretations of young children's engagements with new media. Developing new theoretical and analytical tools to understand young children's online engagements is particularly important given the continuous proliferation of digital technologies, increasing expectations for their use in schools, and demands for a digitally literate and savvy workforce (Luke & Luke, 2001; New London Group, 1996). While those working in the field of adolescent literacy have attended to how shifts in literacy technologies stretch more traditional, paper- and pen-oriented views of literacy (see, for example, Alvermann et al, 2006; Jacobs, 2004; Vasudevan, 2010), and how digital literacy practices and tools may invite expanded life-worlds or opportunities for adolescents' identity work (Lewis & Fabos, 2005), far less is understood about young children's engagements with digital tools and in online spaces, and how these practices relate to identity construction.

Complexities of content in online spaces

Changing conceptualisations of “digital geographies” trouble fixed notions of space and binary understandings of global and local contexts. Recently, literacy researchers have argued for critical sociocultural approaches (Lewis, Enciso & Moje, 2007) that emphasise the role of agency in globalised literacy practices; that is, how social practices are not only constituted by dominant social structures and meanings, but also how those structures may shift or become dislodged through everyday practices (Handsfield, Crumpler & Dean, 2010; de Certeau, 1984). The recognition of relationships among power, agency, local, and global spaces, while essential for critical examination of digital cultures, is not sufficient for understanding literacy practices in online collaborative spaces (Wohlwend & Lewis, 2010). At the heart of this issue is how researchers conceptualise context. For example, the term *context* is frequently used, yet undetermined, in literacy research (Rex, Green & Dixon, 1998). The Internet and other forms of mass communication technologies further complicate the notion of context, as literacy practices and identities are contextualised simultaneously across multiple spaces and times (Jacobs, 2004, 2007; Lankshear & Knobel, 2003; Leander & Sheehy, 2004). Some literacy scholars have theorised how literacy practices may both structure and be structured by multiple space-time contexts and identities (Handsfield, Crumpler & Dean, 2010; Leander, 2001; Leander & Lovvorn, 2006), particularly when such practices involve digital and online tools (Jacobs, 2007). Traditional structures for thinking about literacy practices (e.g., instrumental mastery, paper-and-pencil print literacies) are disrupted by collaborative online literacies, which push the physical bounds of spaces for print beyond a contained screen, paper or canvas (Merchant, 2007). Similarly, ethnographic understandings of context as fixed and tied to a location are challenged by the unsettling of place in participatory new media networks (Scollon & Scollon, 2004). Fewer researchers have explored how the shifting space/time contexts of the Internet relate to early childhood literacy practices.

Rethinking literacies in early childhood

Much research documenting the use of digital literacies in early childhood has focused on computer- or screen-based books and reading, rather than on young children's literacy practices in digital cultures and online spaces. Some literacy researchers have addressed questions prompted by shifting literacy technologies in early childhood (Labbo & Reinking, 2003). Turbill (2001), for example, expands the construct of concepts about print (CAP) (Clay, 1972) to include concepts of screen (e.g., clicking, dragging, scrolling, and hypertext navigation). But while these adapted frames respond to shifts in materiality and the convergence of multiple semiotic resources (e.g., print, visual images, etc), they do not address social purposes for engaging with screens (Merchant, 2007; Smith, 2002) or explain how young children may be engaged in identity work through techno-literacy practices (Marsh, 2004). The recognition that toddlers exercise agency in negotiating texts and enacting literate identities (Rowe, 2008) poses challenges for analysing young children's engagements in online spaces (Flewitt, 2011; Marsh, 2011). The need to better understand how young children make sense of and participate in digital cultures prompted a recent special issue of the *Journal of Early Childhood Literacy* on geosemiotics (Scollon & Scollon, 2003), analytic mergers of linguistics, social semiotics, and ethnography that consider texts within the "connectedness of material and virtual places and the possible trajectories through them" (Nichols, Nixon, & Rowsell, 2011, p. 112). By exploring new interpretive frames for early literacy contexts and how they might be brought together to understand these issues, we embrace the requirement to complicate the here and now—more static conceptualisations of space/times. This work is crucial for disrupting the material and interpretive frames that govern the well-traveled paths of literacy research and teaching.

Theoretical constructs: Nexus and rhizome

Nexus: Social practices, embodiment and participation

A nexus analysis is an ethnographic approach to researching action and language that is uniquely suited for examining the literacy practices in a toddler's silent handling of a computer mouse, captured through a parent's camera work and viewed by hundreds on YouTube. Scollon's (2001) nexus theory situates online text production in sociocultural histories of shared practices and identities among members in a particular location, drawing upon constructs of mediation and situated learning in cultural-historical activity theory (Leont'ev, 1977; Vygotsky, 1935/1978) and social practice and habitus in Bourdieu's practice theory (Bourdieu & Passeron, 1977). In nexus analysis, every action is simultaneously co-located within a local embodied community of practice and a far-reaching historical nexus of practice and global cycles of discourse that anticipate actions and future trajectories. As such, nexus is the site of an intersection of three sets of simultaneously ideological, social, and material forces: 1) discourses in place, 2) interaction orders, and 3) historical bodies of individuals. Nexus of practice explains how the simplest physical mediated actions interact to constitute valued social practices, how these social practices interact as nexus of valued ways of participating, and how these nexus create expectations for particular identities and meanings. Clusters of anticipated practices and identities are linked to and legitimated by multiple disparately-powered discourses cycling through a place. Social actors take up nexus in interaction orders, the regular ways of grouping (e.g., singles, couples, lines, platform events for audiences) that organise daily living. These practices become engrained in historical bodies as the "life experiences of [the] individual social actor[s]" (Scollon & Scollon, 2004, p. 19). Thus, a nexus converges discourses and practices, past, present, and future,

embodied by the individuals who are interacting together within a particular place, whether face-to-face or digital.

Although Scollon theorised nexus as unbounded, he characterised these automatic, everyday ways of doing things as a “constellation of linked practices” (2001, p. 5), emphasising the intersections and connections that make it easy for us to recognise each other as members of the same group. “The word [nexus] leaves open the possibility of using it to refer to both the point of connection between practices as well as the overall set or pattern of connections” (p. 147)—as well as a focus on “concrete day-to-day actions” (p. 11). Nexus allow us to credibly “pull off” situated identities in prevailing discourses (Gee, 1996), to embody cultural models, to circulate community expectations, to recruit members, and so on. The most significant and engrained nexus are emphasised to novices to prepare them for cultural participation (Gee, 1999). In this sense, nexus analysis (Scollon & Scollon, 2004) is appropriate for analysing and theorising young children’s introduction to participatory literacies with new media.

Children are immersed in cultural demonstrations in daily living, but at times this instruction is more direct, so that normally backgrounded nexus are foregrounded and explicitly taught. For example, Luke (1992) noted the extreme emphasis on managing bodies in early literacy instruction, practices that will be familiar to many preschool and kindergarten teachers: sitting still with hands and legs folded during read-alouds, and gripping pencils just so while writing. These expected combinations of bodily actions for reading and writing are stressed in early childhood, becoming habituated and engrained nexus that mark literate school identities (e.g., “good student” and “neat writer”). Attending to nexus of co-occurring naturalised practices is a way to sort through intertwined cycles of discourse (e.g., accountability and standardisation) that stretch forward and back across time and space in order to locate the social actions that most affect actors’ identities. Nexus analysis aims to locate and engage convergences in order to change nexus in ways that can open access or create more equitable ways of interacting (Scollon & Scollon, 2004); that is, the end goal of a nexus analysis is to support divergence from established patterns and to see new trajectories and possibilities.

But what might an interpretive frame focused on intersections overlook? Although the goal of a nexus analysis may be to act in ways that diverge from established patterns, analytically researchers look for connections across embodied practices and discourses and may be more inclined to see patterns of convergence than divergence. This tendency toward tracking convergence is not new or unique to nexus analysis (see, for example, Tierney’s discussion of this issue in his 1992 presidential address to the National Reading Conference).

Analytical tools that help researchers both see and understand divergence are underexplored, yet require serious consideration given the affordances of digital online media and the challenges that online literacy practices pose for notions of context. In the next section, we describe Deleuze and Guattari’s (1987) concept of the rhizome and suggest that it provides a useful heuristic for considering and learning from divergences that surface in data. Other theoretical insights from Deleuze and Guattari, and from Deleuze’s independent work (e.g., *Difference and Repetition*, 1994) can help researchers consider further complexity beyond divergence and convergence. We focus on just one aspect here—the rhizome—to provide one example of how such analytical tools might be integrated across nexus analysis and other interpretive frames.

Rhizome: Mobility, flow and divergence

The concept of the rhizome, drawn from the philosophy of Deleuze and Guattari (1987), has informed a variety of academic fields, such as cultural studies and literary

analysis, and (more recently) literacy studies. Deleuze and Guattari argue that rhizomes (plants such as crabgrass and tuberous growth systems) are essentially different from trees, and that arboreal thinking—the metaphors of trees and taproots that have dominated Western thought—produce hierarchical and fixed structures that dominate and permeate interpretations of social phenomena. Unlike trees, rhizomes thrive on divergence and experimentation (Kamberelis, 2004), spreading out in multiple directions simultaneously and potentially disrupting dominant structures to chart new trajectories: “To be rhizomorphic is to produce stems and filaments that seem to be roots, or better yet connect with them by penetrating the trunk, but put them to strange new uses” (Deleuze & Guattari, 1987, p. 15). Rhizomes may also spread out in subterranean growths, emerging in unexpected spaces and times, finding and generating cracks in social categories and structures that are presumed to be coherent and natural.

Deleuze and Guattari (1987) identified six interconnecting principles of the rhizome, which are helpful for considering how rhizomatics might inform understandings of social practices. These principles include connection, heterogeneity, multiplicity, asignifying rupture, decalcomania (tracing) and cartography (mapping). Deleuze and Guattari suggest that “any point of a rhizome can be connected to any other, and must be” (1987, p. 7), such that possible trajectories for practices are heterogeneous rather than dichotomous and linear, and productive of difference rather than only reproducing expected trajectories of practice. This production of difference implies multiplicity, which may be produced through the fourth principle of the rhizome, asignifying rupture, or the divergence via lines of flight from and into familiar and dominant categories or frames. To be clear, lines of flight do not necessarily produce a permanent destruction or negation of dominant social structures or trajectories: “You may make a rupture, draw a line of flight, yet there is still a danger that you will reencounter organizations that restratify everything, formations that restore power to a signifier, attributions that reconstitute a subject...” (pp. 9-10) and reproduce hierarchies. These restratifying practices can be thought of as “lines of segmentarity” (p. 9). This is an important principle for considering digital geographies of practice. Rhizomes can converge to reproduce hierarchies and dominant power structures.

Importantly, however, the rhizome is persistently mobile and thus resistant to containment, continually diverging on new lines of flight. In conceptualising approaches to research and interpretation, rhizomatics potentially ruptures the material and interpretive frames, including the establishment and maintenance of a priori and fixed analytic codes. This last point relates to the principles of decalcomania and cartography. Decalcomania, or tracing, implies repetition (Deleuze, 1994), imposing and reproducing redundancies (Deleuze & Guattari, 1987), whereas cartography, or mapping, is “oriented to experimentation” (Kamberelis, 2004, p. 165) and productive of difference. In everyday practice, lines are traced and mapped, producing multiple flows of both convergence and divergence. As Deleuze and Guattari argue, it is not a question of one category over another, but rather, “of a model that is perpetually in construction or collapsing, and of a process that is perpetually prolonging itself, breaking off and starting up again” (1987, p. 20).

The principles of decalcomania and cartography are particularly important for considering research interpretations, particularly in the case of online, networked literacy practices, which defy bounded notions of space and time. An interpretive approach grounded in rhizomatics, will engage both reproduction, or tracings, and “following,” or mapping out mobile flows:

[F]ollowing is not at all the same thing as reproducing, and one never follows in order to reproduce. The ideal of reproduction, deduction, or induction is part of

royal science, at all times and in all places, and treats differences of time and place as so many variables.... Reproducing implies the permanence of a fixed point of view that is external to what is reproduced: watching the flow from the bank. But following is something different from the ideal of reproduction. Not better, just different. One is obliged to follow when one is in search of the “singularities” of a matter, or rather of a material, and not out to discover a form.... (Deleuze & Guattari, 1987, p. 372).

Traditional interpretive approaches to literacy research have privileged reproduction over following, or the production of difference (Eakle, 2007; Handsfield, 2007; Kamberelis & Dimitriadis, 2004). We argue that in trying to understand young children’s participatory literacy practices with new media, the notion of following as an interpretive tool may both support and serve as a crucial check on a focus on convergence. The concept of the rhizome shares with nexus the principle of connection and resistance to a priori structures as a point of analysis for understanding practice. But the constant tension and flow of practices as they both cohere and break off into new territories and index multiple space-times compels us to appropriate rhizoanalysis as an interpretive frame, focusing our analytic lens on, and following, lines of flight as they are produced in the data.

Literacy researchers have used the rhizome to theorise the play between over-coded structures of practice and disruptive practices or events that forge new, multiple, and unexpected identities or social trajectories (Alvermann, 2000; Handsfield, 2007; Hagood, 2004; Honan, 2010; Kamberelis, 2004; Leander & Rowe, 2006). Among this work, Leander and Rowe (2006) pay particular attention to the movement of bodies in their analysis of participants’ (re)territorialising and deterritorialising moves during a literacy event in a high school English classroom. They argue that these embodied actions produced multiple simultaneous possibilities for student identities, and that a rhizoanalytic lens invited attention to lines of flight, or divergences produced in the event. While some of the above researchers generated maps to represent connection, divergence, multiplicity, unpredictability, and simultaneity in their data, others have operationalised rhizoanalysis in less concrete ways. Kamberelis (2004), for example, did not produce a drawn map or visual of rhizomatic practices to represent his analyses, but rather used Deleuze and Guattari’s (1987) concepts of the rhizome and “pack multiplicities” to theorise about the political or transformative effects produced by two literacy formations—African American slave literacies and a postcolonial feminist Internet site. In this article, we also take a less concrete approach to rhizoanalysis, considering how the concept of the rhizome, including the principles articulated by Deleuze and Guattari (1987) might support analyses that are responsive to the analytical issues articulated by Jacobs (2007) that are brought forth by online collaborative media.

While nexus draws our attention to convergence and helps us theorise the connectedness of social practices, tool use, and identities and to imagine their probable trajectories, rhizomes flee in divergence, pushing us to consider where or how practices may break off in lines of flight, inject new practices and meanings into dominant practices, as well as how lines of flight get subverted—sent underground to later emerge in new space/time contexts.

Data sources and analysis

To illustrate how nexus and rhizome might serve as complementary interpretive frames for young children’s participatory practices with new media, we used them to analyse *Amazing Two-Year-Old YouTube/Computer Wiz*, a parent-produced YouTube video

of a two-year old boy as he turns on a computer, opens YouTube, browses videos, and then shuts down the computer.¹ The video includes the parent/filmmaker's print narration, including transition slides with subtitles. We reasoned that careful observation of the video would suggest key practices with technologies, intersecting practices that typically accompany them, and potential lines of flight.

The video was selected through a four-step filtering process in nexus analysis in Karen's (2011, in press) ongoing research on preschool literacy practices with new technologies. 1) We examined the phenomenon of parent-posted YouTube videos, taking the abundance of videos and high numbers of views by YouTube audiences as an indicator of significance to the posting families and viewers. We analysed the YouTube video webpage for interaction orders, examining it primarily as a platform event; a performance by one or more social actors for an audience. A search identified videos featuring preschoolers (apparently) independently interacting with technology. Specifically, key terms (e.g., "computer wizard") suggested discourses in place relevant in constructing situated identities (Gee, 1999). 2) Looking across highly popular videos in this video pool, we identified high frequency practices as indicators of key practices, including opening and closing applications, browsing, selecting and viewing multimedia, playing video games. 3) We then selected videos by examining the camera shots and content to locate videos with the greatest number of examples of nexus or intersections of these key browsing, selecting, and viewing practices. (See Table 1 for a list of shots and content in the video featured in this article.) 4) Finally, we closely examined action and language in each camera shot using microethnographic methods of discourse analysis (Bloome et al, 2005) to see how mediated actions with technologies became embodied discursive identity expectations in the historical bodies of young children. In transcription, we deliberately foregrounded the child's mediation with the mouse and screen, recognising the significant semantic load conveyed through nonverbal gesture, action, and image (Lancaster, 2001; Rowe, 2008). Accordingly, for each mediated action (row) in the microanalysis in Table 2, we placed a description of the physical action and the situated context, the accompanying utterance, the text on transition slides, the computing practices that pull off a competent computer user identity, effects on screen meanings, and identities and discourses that shape participation.

Finally, using rhizoanalysis, we looked at these nexus as tracings, or regularities of practice—desired, imposed, and anticipated—speculating about what divergences might have been taken, or cut off during the production of the video recorded event and in the social spaces of YouTube. Specifically, we questioned absences in the video (e.g., moments when the child no longer appeared, replaced by a black screen and the video maker's printed narration) and analysed viewer comments as potential lines of flight that might disrupt the social meanings and identities produced via nexus and nexus analysis. In addition to identifying absences (including what those absences might include in the video) and lines of flight, we engaged in rhizomatic analyses by following online links and references to other space/times or digital geographies in the platform event. For example, Adrian, the two-year old subject of the video, visits a YouTube video in which he can listen to the nursery rhyme "Ring Around the Rosie." We also visited and explored the same video, noting discourses and expectations for participation in that digital space. In this sense, we followed lines of flight that diverged from the more nexus analysis and potentially ruptured the meanings produced and readily identified within more bounded space/time contexts as represented in the nexus analysis.

Findings and discussion

In this section we describe our findings based on nexus analysis and rhizoanalysis, respectively. Again, our purpose here is to illustrate how these two frames might contribute to the field's understandings regarding young children's literacy practices with new media and also how these frames support different kinds of interpretations in this regard.

Nexus analysis: Participation, conflicting discourses, and situated identities

Patterns of participation across the corpus of YouTube videos we sampled suggested the value families placed on children's abilities to use technology meaningfully and with a certain degree of independence. Indicators that featured practices were significant to families as ways of participating in the YouTube community included, first and foremost, the act of capturing, uploading, and sharing children's technology interactions, verified by the video descriptions, number of viewings, and the content of viewer comments. Each YouTube video is situated within a platform event, an interaction order (Goffman, 1983; Scollon & Scollon, 2004) that features a staged event viewed by an audience. The uploaded video is a filmed performance, narrated by an accompanying film description and interspersed subtitles. The audience participation in a YouTube platform event is made visible and durable through viewer comments that appear under the video. In the selected video, the description, narration, and viewers' comments expressed surprise that young children could engage technology with apparent ease. One frame in the film capitalises the word *two* to stress the child's young age: "He's TWO." "Did I mention he's TWO?". The narration and video construct this toddler as exceptionally technologically competent. Table 1 shows that the number and speed of the toddler's mediated actions with mouse and screen support his mother's claims of his independent techno-literacy practices of browsing webpages, selecting content, and adjusting volume and screen size to fit his personal preferences. These embodied actions constitute a nexus of practice familiar to proficient computer users.

Table 1. Camera Shots and Content in YouTube Video: *Amazing Two-Year-Old YouTube/Computer Wizard*

| | Camera Shot | Content |
|----|-----------------------------------------------------|--------------------------------------------------------------------------------------------------------|
| 1 | Title | This is Adrian |
| 2 | Mid shot of computer on wooden desk | Child standing by computer |
| 3 | Caption | He is TWO |
| 4 | Mid shot of computer on wooden desk | Child turns on monitor by pressing button. |
| 5 | Caption | He loves computers... |
| 6 | Mid shot of computer with CPU on floor | Child turns on CPU by pressing button. |
| 7 | Caption | A lot... |
| 8 | Mid shot of computer on wooden desk | Child returns to monitor and stops. Man lifts child onto computer chair. |
| 9 | Caption | Did I mention he's TWO? |
| 10 | Midshot of child seated at desk in front of monitor | Child reaches for computer speaker and presses button to turn it on. Child reaches over to move mouse. |
| 11 | Caption | We didn't teach him this |

| | | |
|----|-------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12 | Midshot of child seated at desk in front of monitor | Child manoeuvres mouse to pull up start menu, select browser, |
| 13 | Zoom in; close up of child's head and computer screen | Child launches Google, selects "Bookmarks", highlights and clicks on a link on bookmark menu; launches YuliaGM YouTubechannel. |
| 14 | Caption | But we're pretty sure he was observing... |
| 15 | Closeup of computer screen and child's head | Plays Lullabye, My Baby video, adjusts volume toggle bar |
| 16 | Pan to cut-in shot of child's hand on mouse | Child's hand on mouse |
| 17 | Closeup of computer screen and child's head; zoom out to mid-shot of child at desk with hand on mouse | Lullabye, My Baby video continues to play |
| 18 | Caption | He loves browsing YouTube videos |
| 19 | Midshot zooms in to closeup of screen and top of child's head | Twinkle, Twinkle, Little Star video on screen |
| 20 | Caption | Finding, playing, adjusting screen size and volume... |
| 21 | Midshot of child seated at desk in front of monitor | Twinkle, Twinkle, Little Star video on screen |
| 22 | Caption | And he is very particular about what he wants |
| 23 | Side angle of child at computer | Wheels on the bus on screen. Woman [off camera]: Do a different one. Child: No! I 'ant this one! Woman: You want this one? Child: Yeah! |
| 24 | Caption | He also found a way to use YouTube as a valuable learning tool... |
| 25 | Mid shot, top-down angle of child at computer | Alphabet letter in succession appear on computer screen with song singing alphabet in sequence. Child sings along, echoing about 1 to 2 letters behind song. |
| 26 | Caption | And he learns the songs that sound the coolest (to a two-year-old...) |
| 27 | Mid shot, top-down angle of child at computer | Screen show Ring Around the Rosie nursery rhyme while song plays "Ringa, ringa, roses, a pocketfull of posies, a-tishoo, a-tishoo" Child echoes "tishoo", then "Boom!" |
| 28 | Caption | He can click back when he wants to... |
| 29 | Zoom in to screen only and out again to mid-shot | Screen shows Wiggles in car |
| 30 | Caption | And when he's done, he always turns it off...properly... |
| 31 | Mid shot, top-down angle of child at computer | Screen show Yulia GM screen of woman playing guitar. Screen changes to Windows desktop. |
| 32 | Angle changes to side angle shot, showing child seated on chair with hand on mouse | Screen shows pop-up closing menu |
| 33 | Mid-shot side angle of child seated at computer | Blue shut down screen on monitor; child lifts and brings speaker closer and then presses button to turn off speaker, replaces speaker, child looks up at camera. |

| | | |
|----|-------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|
| 34 | Mid-shot side angle of child seated at computer | Woman moves chair back from desk; back of woman shown as she bends in front of camera to lift child out of chair. |
| 35 | Caption | Thanks you YouTube for taking such good care of my son! ;) |
| 36 | Caption | The Internet Generation is taking over... |
| 37 | Caption | Music, kid, and camerawork by YuliaGM http://www.youtube.com/YuliaGM |

These techno-literacy practices signal discourses that construct identities of avid fan, agent with the power to self-select content, and competent technology user. For example, the discourse of development (Burman, 1994; Cannella, 1997) sets up a linear progression with an expected timeline in which children follow a single path. Developmentalism constructs lags and deficits and optimal windows for intervention, but also head-starts and the possibility of acceleration. From a developmental perspective, the toddler's use of technology practices indicates a precocious independence that is remarkable, a leapfrogging beyond the expected stage. Developmental discourse also stresses individual assessment of independent accomplishment, thus making possible the construction of a child prodigy who quickly manipulates abstract icons on a computer screen. In contrast, the discourse of digital natives (Prensky, 2001; Zevenbergen, 2007) ascribes technological proficiency to an entire generation of young children and youth whose first language is "txt", in contrast to laggard identities and traditional literacies attributed to older adults.

However, when we analyze the video against viewer comments within the platform event, we also see discourses that construct the same child as helpless, vulnerable to dangers posed by techno-literacies (specifically, computer radiation). The discourse of child innocence (Cannella, 1997) circulates through concerns about online safety and a distrust of technology. As innocents, children are vulnerable organisms to be nurtured and protected. This discourse constructs children's need for natural experiences, emphasising their susceptibility to potential threats from computer radiation and Internet content.

Commenter 1

i could do that when i was two too!

Commenter 2

Nice, but that old style monitor is worrying. I'm thinking of the radiation...but I'm not an expert in that topic.

Parent

lol
it's the only old style monitor between all the parents, grandparents and uncle's houses :) He usually practices on laptops and LCDs :)

Commenter 2

That probably makes is safer, though I'm not an expert.
I can'te help wondering if he's part Indian—he's got dark looks. I'm hoping my daughter's relationship with her (really smart) Indian boy will result in marriage and children—I'm sure they'll be as cute AND smart like yours. Both my daughter and her guy are from smart families, so yeah :)
Here's some interesting reading for you.

Google: save russia marry indian
U can message me privately if you like about it. I hope u do!

Commenter 3

:) that's so sweet. lol. He is talented!

Another viewer's comment brings forth a contradictory discourse in a storyline centred on racialised national identities and marriage—a line of flight that may or may not be taken up off line (Commenter 2, second comment), which we discuss in more detail below. In addition, the absences—bits that are edited out of the video—raise questions about other potential divergences that may elude our analyses all together. The simultaneous video and identity production implies a process of structuring, or tidying-up, of uncertainties and contradictions. This process reproduces familiar discourses and well-worn tracings through which families can imagine desires for preschoolers' identities and viewers can reimagine personal histories (“i could do that when i was two too!”).

Rhizoanalysis: Absences, lines of flight and global identities

In this section, we discuss our analyses from a rhizoanalytic lens. We do so by not just highlighting absences and lines of flight, but also by following some of them ourselves. We focus this discussion on the absent spaces within the parent-produced video, and on two lines of flight produced in the online platform event.

With respect to absences, we focused on the parent/producer's efforts to tidy up representations of Adrian. In particular, we noted 13 places, or scenes, in which the parent/producer's narration appears, but in which we have no visual image or audio representations of Adrian. In scene 28 (Table 1), for example, the video displays a black screen with the text “He can click back when he wants to,” but we do not see Adrian in this six second window of narration. To be clear, we are not criticising the editing or design techniques of the video's producer. Indeed, we consider the video to be well made, integrating multiple semiotic modes of representation (music, video, text) in ways that make the video pleasing and engaging to watch. However, given our interest in constructions of young children as they engage with digital media, we are also wary of taking such absences at face value, as they can be interpreted as a possible cutting off, or editing out, of alternative constructions of Adrian as techno-toddler. Did he visit websites that his mother did not want the viewer to see? Did he need a snack or a diaper change? It is certainly possible that those kinds of divergences did not occur. But if such scenes did exist and were left in, what meanings might they index regarding childhood identities and individual competence, and how might those meanings either converge or diverge from those that are left visible? It is possible that portions of the video were simply split up in order to insert written narration. However, the post-narration scenes do not necessarily flow from the pre-narration scenes (e.g., scenes 19.2-21.1 in Table 2).

Table 2. Transcript of Mediated Actions in Browsing/Viewing Nexus

| Analytic Concept: | | Describing Actions across Spaces as: | | | Looking for: | Unpacking: | Following: |
|-------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|---------------------|------------------------------------------------------------------------------|------------------------------------------------------------------|---------------------------------------------------------------------------------------|------------|
| NEXUS | Mediated Actions with Materials: Foregrounded Actions in Camera Shot Backgrounded Framing Foregrounded Meaning in Captioned Slide | Naturalised Nexus of Practices & Recognition Work | | | Foregrounded Meanings through Backgrounded Practices | Anticipated Identities/Futures in Cycles of Discourse | |
| RHIZOME | Spatial Configurations: Tracing and Mapping Mobility and Proliferation | Lines of Segmentarity; Hierarchies; Lines of Flight | | | Restratications, Edits, & Absences | Potential Ruptures & [Expected] Unexpected Offshoots | |
| Camera Shot | Child's Mediated Actions Visible within Camera Shot | Text: Caption, Rhetoric | Talk/Sound | Computing Practices | Computer Screen Content | Technology Discourses/Identities | |
| 18 | 1:13 Caption on Black Screen: He loves browsing YouTube videos | Print [Claim of Skill] | Music | ? | Transition slide Black screen with white print, fade in & out | Tech/Fan, Digital Native/Agentic Consumer Potential Rupture or Restratication | |
| 19.1 | 1:15 Hand on mouse. Twinkle, Twinkle, Little Star video launches; "Related videos" column visible on right. | Live Action [Evidence] | Music | Browsing very quickly, 2 sec., to next video | Back from full screen mode. Twinkle...star version 1 opens | Tech/Fan, Digital Native/Agentic Consumer | |
| 19.2 | 1:17 Hand off camera. Click on down arrow on scroll bar, highlighting videos, and clicking on 2 nd entry in related videos column. | Live Action [Evidence] | Music [loud video] | Browsing, Scrolling down, rolling over, selecting | Twinkle...star version 2 opens. | Tech/Fan, Digital Native/Agentic Consumer | |
| 19.3 | 1:20 Hand off camera. Scrolling down, highlighting, and clicking on 3 rd entry in related videos column. | Live Action [Evidence] | Music [quiet video] | Scrolling down, rolling over, selecting | Twinkle...star version 3 opens | Tech/Fan, Digital Native/Agentic Consumer | |
| 20 | 1:22 Caption on Black Screen: Findings, playing, adjusting screen size and volume | Print [Claim of Specific Skill] | Music | ? | Transition slide Black screen with white print, fade in & out | Tech/Skill user, Digital Native/ Apprentice Potential Rupture or Restratication | |
| 21.1 | 1:25 The keyboard has been moved to the right, much closer to the mouse; Adrian's head is not partially blocking the view of the screen from the camera's perspective. | Live Action [Evidence] | Music | Hidden repositioning of body & equipment, for camera work or computing ease? | Twinkle version 1 reopened, now playing | Tech/Skill user, Digital Native/ Apprentice | |
| 21.2 | 1:27 Hand on mouse. Cursor moves over album icon at top right of screen, clicks, opening webpage. | Live Action [Evidence] | Music | Quickly launches link, 1 sec. Clicking link opens larger viewing window. | "Lullaby Album" webpage Restarts video in larger screen | Tech/Skill user, Digital Native/ Apprentice, evidence | |

As specific engagements or actions by Adrian and/or others around him are edited out, potential lines of flight or divergences from expected participatory actions are diverted underground, or from the view of data collection and analysis, “off the record.”

Despite efforts at “tidying up” identity representations, uncertainty and divergences (lines of flight) persist in the platform event, projecting the possibility of alternative social futures (“save russia marry indian”; Commenter 2, second comment). Lines of flight become apparent in our analyses when the viewer comment regarding race/nationality/marriage potential is inserted into the platform event; just long enough to invite a subterranean flow into entirely different space/time contexts (Adrian in the future as a husband transporting his “smarts” across national borders). And while multiple possible divergences may arise, the line of flight involving international marriage is significant in that it indexes a global identity for Adrian in a way that his mother’s efforts in producing the video itself do not. In “This is Adrian,” the injection of a global identity can be viewed as a line of flight that is cut off from the video itself, as produced prior to sharing it on YouTube. The tools for this “cutting off” might be conceived of as discourses in place—the dominant constructions of what it means to be a digitally native techno-toddler. In this sense, the initiator of the line of flight him- or herself subverts the line. However, the line of flight is potentially taken up again via a backchannel in a different platform event altogether (“u can message me privately if u like about it”; Commenter 2, second comment). This highlights the persistence of the rhizome, much like a rhizomatic plant shoots tendrils underground only to emerge elsewhere in a new formation and in a different space/time context.

“Stems and filaments” are also injected via advertisements like “Cartoon yourself” and nursery rhyme videos (“Ring Around the Rosie”). This advertisement by Zwinky.com juxtaposed next to the video Adrian is watching of “Ring Around the Rosie” (see Table 1, scene 27) offers simultaneous contradictory identity discourses of young children, even in an animated world, that index different global identities for young viewers. The Ring Around the Rosie video was produced in English by Rajshri Media, which, according to its website, “creates aggregates and distributes premium Indian entertainment and special interest content across new media platforms and digital entertainment devices to a global South Asian audience”. The animated children in the nursery rhyme video are presented as prepubescent and innocent. In contrast, in the adjacent advertisement for “cartooning yourself” the animated figure is presented as a highly sexualised blonde girl in a bikini.² The advertisement does not appear specifically targeted to or limited to a South Asian audience, and projects a very different childhood identity. While we have no way of knowing the degree of uptake, if any, by Adrian or others, of the advertisement, its presence itself invites a potential line of flight away from the dominant discourses of child as innocent or techno-toddler that converge in the Adrian video. The line of flight, as well as the multitude of other potential lines of flight enabled in such online spaces, presumes a global and cosmopolitan identity that is not forged in the produced video, “This is Adrian.”

Conclusion and implications

In this article, we analysed a parent-produced YouTube video (“Amazing Two-Year-Old YouTube/Computer Wiz”) of a toddler surfing the Internet (YouTube, specifically) using both nexus analysis and rhizoanalysis. Our interpretations suggest the convergence of multiple discourses regarding early childhood and technology, as well as processes of tidying up identity constructions for Adrian. The fluid and multiply-situated platform event (producer narration, activity setting, viewer comments) simultaneously constructs Adrian as vulnerable, reproducing a discourse of child

innocence (Cannella, 1997), and as independent technology user and digital native (Prensky, 2001). Using a rhizoanalysis, we disrupted overlapping cycles of discourse identified through nexus analysis to both speculate about potential divergences omitted or edited out of the video and to follow lines of flight to online spaces that may produce alternative and global identity possibilities for Adrian or other viewers.

Both analyses share a focus on social actions in multiple, simultaneous, and interacting histories and trajectories of practice, identities, and discourses. Nexus analysis identifies linked actions and clustered practices that bring together global and local, past and future, with the goal of eventually transforming the discourse submerged in entrenched patterns of participation. Rhizoanalysis recognises these convergences as tracings, which Deleuze and Guattari (1987) characterise as lines of segmentarity and hierarchical striations and structures, but understands these convergences as smoothings of the chaotic.

There is also a shared focus on mobility, but with important differences. An emphasis on semiotics in nexus analysis assumes that we act with materials in order to make sense and that this activity follows historical cycles and predictable paths, opening the possibility of potential and intentional disruption when we see where and how to act differently. However, a line of flight is hard to make sense of because it neither fits into our prior tracings nor travels along predictable cycles of discourse. Rhizoanalysis expects divergent lines that are fluid and emergent, in a constant state of becoming. By extending our notion of nexus through rhizomes, we expected to find unexpected offshoots; that is, we were actively seeking and mapping lines of flight that could open up new alternatives and generate potential paths. The complexity of discourses, practices, expectations, and tangents in one toddler's computing suggest the need for more nuanced tools that can delve into technology interactions that involve much more than a child's fine motor development or mouse-handling skill but multidirectional, multivocal, multiparty, and interdiscursive negotiations. For this reason, we must look beyond individual command of internalised knowledge toward connectedness with externally-held co-constructed knowledge in digital cultures: evident in convergence in linked practices, shared expectations, and overlapping discourses. But we need analyses that explain how divergence and proliferation allow an individual to produce a text that stretches out across vast networks and reach millions within seconds. Nielsen ratings found that one-fifth of preschool children aged two to five are surfing the Internet (McDonough, 2009); like Adrian, many are navigating screens and selecting their own content (Rideout, Vandewater, & Wartella, 2003). Children's growing engagement with mobile technologies and new media requires shifts in early childhood research and practice that address preschoolers' digital text and identity production. Bringing together nexus and rhizomes may provide researchers with new ways of understanding networked literacy practices and data such as the Adrian video.

At the same time, we are left with a variety of questions, particularly with respect to analytical approaches. Is nexus analysis' focus on convergence adequate for understanding early childhood literacy engagements in a globalised world? Is rhizoanalysis as a research tool, particularly as it involves the principle of cartography and following, a bit like surfing the Internet—rife with interpretive lines of flight? There is recognition of the Internet as the “defining technology of globalization” (Blommaert, 2010, p. 22), supporting the flow of information, literacy practices, and identities across space/times and providing opportunities for engaging in geographically more distant cultural contexts. How might early literacy education change in response to children who travel across glocal contexts where they play in and out of webs of power, identity, and difference? Finally, what caveats should be considered by researchers engaging these tools to maintain focus within analytical projects so that findings are meaningful,

particularly as we search for new ways to support teachers in engaging students with digital literacies in early childhood and beyond?

Notes

¹ See <http://www.youtube.com/watch?v=pFZ9aP2jY48>

² See

<http://www.zwinky.com/dl/index.jhtml?spu=true&partner=ZJxdm047&theme=cartoon>

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