Charting new directions: The Potential of Actor-Network Theory for Analyzing Children's Videomaking

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Abstract

This paper represents preliminary efforts to understand what Actor-Network Theory (ANT) might contribute to our interest in analyzing what we hope are enhanced educational practices for second language (L2) learners. This theory encourages us to examine more closely the things, the tools, the non-human actants that are active in particular educational practices, and how those tools and not others, "exclude, invite and regulate particular forms of participation" (Fenwick and Edwards, 2010, p. 7). We identify aspects of ANT that are relevant to our work on videomaking, describe our videomaking research and provide two illustrations of how we began to see what ANT might offer in analysis of our video data and to consider its potential for guiding our ongoing fieldwork. We argue here that ANT highlights the importance of paying attention to the production of networks between both human and non-human actors during the videomaking process to understand how these interactions shape the school experiences of language learners.

"Material things are performative: They act, together with other types of things and forces, to exclude, invite and regulate particular forms of participation" (Fenwick and Edwards, 2010, p. 7).

In the introduction to his 1996 book, *Aramis, or, the love of technology*, Bruno Latour tells the story of the main character in Samuel Butler's *Erewhon* who is imprisoned for owning a watch. In Butler's utopian world, 'modern' technology is forbidden for fear that, unless reverted to simple tools, people would lose their souls. But, as Latour points out, Butler's novel is not as utopic as it may seem: *Erewhon* is in fact a mimetic representation of "our own intellectual universe, in which people who are interested in the souls of machines are severely punished by being isolated in their own separate world, the world of engineers, technicians, and technocrats" (Latour, 1996, p. 1). When technology is not perceived as the enemy, Latour continues, it is often regarded as

a tool manipulated by human enemies, individuals whose main purpose is inventing new technologies that cater to their idiosyncrasies.

It may be that suspicion and isolation of those interested in new technologies was a nineteenth (Butler) and twentieth century (Latour) phenomenon and that persons of the twenty-first century are much more comfortable with the "souls of machines". Clearly, children and youth are growing up in a world in which new technologies spring up everyday, and few, except perhaps some parents and other commentators, seem worried about using these technologies. Indeed, we see many new technology advocates arguing that educational institutions are, to their detriment, much slower than young people to mobilize the affordances of new technologies and the new ways in which information is available. One group of educators wondering what new economic, technological and cultural formations, including the increasing availability of interdisciplinary information, will mean for education are those interested in literacies, multiliteracies, and multimodal literacies (recent examples include: Coiro, Knobel, Lankshear & Leu, 2008; Early & Marshall, 2008; Sheridan & Rowsell, 2010; among many others). These researchers have argued that the increasing presence of digital media, in which meanings are encoded in text, music, sound, still and moving images, have become very important in the lives of children and adults globally and that these media must change education. Mills (2010), for example, argued that digital technologies "have decisively changed antiquated notions of language, curriculum and literacy research. Texts are increasingly multimodal, that is, they combine visual, audio, linguistic, gestural, and spatial modes to convey meaning in a richer way" (p. 15). Others have argued that instruction in multimodal literacies can link students' educational lives with their outside-school lives, and that such instruction has an unparalleled ability to enrol students from various cultural/linguistic backgrounds, with diverse resources and repertoires, to negotiate and construct new paths towards learning literacy (Hull & Zacher, 2007; Kist, 2005; Rogers & Schofield, 2005; Hull, 2007; Rogers, 2009; Rogers, Winters, LaMonde & Perry, 2010). These discussions of how multimodal literacies might provide enhanced opportunities for multilingual and multicultural students has been of particular interest to those of us concerned with second language education.

Often focused on lauding the benefits of using technology in classrooms, multimodal literature has been perhaps less focused on *how* these affordances happen or *how* particular kinds of technology enable particular kinds of interactions in classrooms (New London Group, 1996; Cope & Kalantzis, 2000; Gee, 2004; Street & Lefstein, 2007). Newer multimodal/multiliteracy research considers how technological tools are taken up differentially by people in diverse social, geopolitical, cultural and economic locations (Prinsloo & Rowsell, 2012). This research begs questions such as: How does having a *particular* technological tool with particular affordances affect children's participation in classrooms in location X? Are there differences in how children located in privileged communities participate in digital technologies and how children in other circumstances participate? Are there differences (and if so, what are the differences) in videomaking with a digital camera as opposed to an electronic tablet with video capabilities? These sorts of questions have been vitally important to us in our study of the affordances of videomaking. with child learners of English as an additional language

(EAL). Like Hamilton (2010), we see promise in a little-used perspective in education, Actor-Network Theory (ANT) to help us investigate such questions and provide direction for data collection in our ongoing work. As phrased by Fenwick and Edwards (2010), ANT does not provide a "theory of what to think" (p. 1), but rather offers strategies for intervention in educational issues, and as critical educators, we take seriously our responsibility to intervene in educational research, policy and practice. This paper represents our preliminary efforts to understand what ANT might contribute to our interest in analyzing what we hope are enhanced educational practices for second language (L2) learners. We think the theory encourages us to examine more closely aspects of learning environments that we might not necessarily have otherwise paid much attention to: namely, the things, the tools, the non-human actors in ANT parlance that are used in particular educational practices, and how those tools and not others, "exclude, invite and regulate particular forms of participation" (Fenwick & Edwards, 2010, p. 7). We begin by identifying aspects of ANT that are relevant to our work on videomaking, and then examine how it has been taken up in educational research and how it is complementary to recent changes in the study of language learning. Following this, we describe our videomaking research and provide two illustrations of how we began to see what ANT might offer in analysis of our video data and to consider its potential for guiding our ongoing fieldwork. We argue here that ANT highlights the importance of paying attention to the production of networks between both human and non-human actors during the videomaking process to understand how these interactions shape the school experiences of language learners.

Actor-Network Theory

Bruno Latour and Steve Woolgar (1979), are credited as providing the first articulation of the ideas of ANT on the basis of an ethnographic study of a science laboratory in La Jolla, CA. Rather than seeing scientific "facts" as descriptions of the world "outside", they became convinced that scientific knowledge is rather a product, an effect of extremely complex networks of people and objects. Their observations convinced them that "there is no objective pre-given nature out there, independent of the inscription devices of scientific labs […] there is no theoretical universe out there separate from the practical handling of inscriptions" (Blok & Jensen, 2011, p. 47). They argued that the characteristics of the "inscription devices" of scientific laboratories (the reports, the experimental equipment and their calculations, the lab logs, the articles intended for publication in scientific journals, and so on) each had a part to play in producing certain kinds of knowledge.

John Law (2007), a British sociologist of science, saw ANT as a method that turns our attention towards the way our world is assembled, the ways in which networks of people, ideas, discourse and material things are formed and maintained by fragile relations. Law speaks of ANT as "tools, sensibilities and methods of analysis that treat everything in the social and natural world as a continuously generated effect of the webs of relationships within which they are located" (p. 595). From this perspective, networks are combinations of physical materials, people and representations that work together and have agency in determining action. While social science has long investigated interactions among people, ideas and discourse, one of the main contributions of ANT to

sociology is perhaps the *principle of symmetry*: as Law (2008) put it, "the distinction between human and non-human is of little initial analytical importance" (p. 8), arguing that attention to non-human actors in networks is critically important. Therefore, ANT theorists work from the assumption that not only are physical objects (tools, mediators) and symbolic tools (discursive practices) important in how humans accomplish their objectives, but that such tools can be seen as "actants", which, once vested with power or responsibility, act on behalf of humans, have agency, and thus influence practices in local settings. ANT advocates tracing how technologies, along with human actors and prevailing discourses, are linked in and across particular networks so that if network change is desired, tracing its elements can provide tactics for change.

In the field of education, as Fenwick and Edwards (2010) pointed out, dichotomies like teachers and students, in-school and outside-school, usually taken as *a priori* distinctions, are seen as effects of particular assemblages (networks) of people, discourses, physical structures, other material resources, practices and so on. They illustrate the principle of symmetry with the example of how a mathematics textbook for children "embeds a network of curriculum development (policy-makers, computers, teachers, maths experts) with networks of publications (writers, editors, reviewers, text drafts, pilot testers, print machines, ink) in a network of distribution in schools and classrooms across a country or further" (Fenwick & Edwards, 2010, p. 3). This is an example of what ANT researchers might call a relatively durable network that might establish what mathematics knowledge is for children and might also establish how mathematics knowledge might be taught as well as tested. ANT encourages observers to be aware of the phenomenon they call blackboxing, by which networks become invisible; for example, when a mathematics textbook is taken to be what mathematics knowledge should be for children of a particular age, and the intricate linkages among people and things (networks) that went to make up the textbook become occluded.

ANT also encourages the researcher to "follow the actors" (Latour, 1987) with an ethnographer's gusto and a proclivity for wanting to understand how social order is produced, which is extended to observing individuals' routine actions as *effects* of heterogeneous networks of human and non-human actors. An ANT ethnographer is interested in *how* heterogeneous networks come together and eventually become recognized as an "entity", *how* various actors (human and non-human) strengthen their position by making alliances and recruiting others, and *how* they intersect at particular points (called *nodes*) in the networks.

ANT mounts a powerful critique of 'traditional' social science methodology. An ANT scholar resists the idea that the world is "out there" to be discovered, tamed, and explained through various "lenses". ANT rejects neatness, the search for definite strategies and decries practices deeply entrenched in the safe and the predictable: "Do your methods properly. Eat your epistemological greens. Wash your hands after mixing with the real world. Then you will lead a good research life. Your data will be clean. Your findings warrantable. The product you produce will be pure. It will come with the guarantee of a good shelf life" (Law, 2007, p. 596). Instead, ANT scholars propose a research strategy that follows one principle: the "*disciplined lack of clarity"* (Law, 2006, p. 2), or as Law put it, "research needs to be messy and heterogeneous… because that is

the way the largest part of the world is – messy, unknowable in a regular and routinised way" (Law, 2007, p. 595). This disciplined lack of clarity enables a focus on "contingent, local and practical engagements" (Law, 2011, p. 2) in which various networks of human and non-human entities come together, sometimes for only a brief period of time, to create heterogeneous networks of knowledge, people, things and practices.

ANT in Education

Although ANT-informed analyses are widely used in many disciplines (distinctions among which ANT would see as network effects), there is a relative paucity of ANT-based literature in education (for exceptions see Clarke, 2002; Fenwick & Edwards, 2010; Gough, 2004; Hamilton, 2001; 2009; Nespor, 2002). However, as already noted, some literacy researchers have been particularly interested in the approach, because it potentially helps us understand how more distal networks that define literacy are linked with local people, practices and artefacts, and it might serve to uncover the dynamics between the human and non-human actants in shaping literacy practices. As Brandt and Clinton (2002) argue,

> Objects are animated with human histories, vision, ingenuity, and will, yet they also have durable status and are resilient to our will. Our objects are but more than us, bigger than we are; as they accumulate human investments in them over time, they can and do push back at us as "social facts" independent and to be reckoned with. (p. 345)

Brandt and Clinton provided ways to think about how objects were specific to particular times, places, practices and persons, but also pointed out that objects established relatively durable and unchanging conceptions of social facts, for example, what "real literacy" was. In the 1970s and 1980s, literacy scholars had come to understand their focus of study as situated practices and had ethnographically described those practices in detail in diverse locations and communities (Brice Heath, 1983; Street, 1995). Clarke (2002) discussed this issue further, pointing out that at the same time that it was important for scholars to recognize the multiple sites and specific local manifestations of literacy, "we are faced with international literacy programmes, accreditation frameworks and other measures of acquisition and competence, which reduce literacy to homogeneous packages of functional skills" (p. 108). Hamilton (2009; 2010) used ANT to examine the people, their interactions, their discourses, and the material tools in British adult education networks, showing that in mandating the use of a particular document for assessing students, a reductive view of literacy (such as that Clarke observed) resulted. Hamilton argued that attention to all elements of a network is strategic if changes are desired, and she was hopeful that educators could effect change. Lenters (2009) similarly showed that literacy objects (e.g. how-to books for teachers, worksheets, student planners, written instructions, report cards) played agentive roles in the classroom literacy practices of teachers and students in her research site. These objects and their implied classroom management, teaching and assessment practices, enabled the teachers to handle the contextual pressures (class size, student diversity, assessment, open-space

building design) of their classroom situations. This resulted, Lenters found, in a restricted pencil and paper type of literacy pedagogy that minimally met curricular requirements, yet did little to engage the students in the kind of transformative, cross-curricular, multimedia, multilingual literacies that connect classroom learning to the technologically-oriented, multimodal literacies prevalent out of school.

The attention paid to objects and mediators in human/object action characteristic of ANT has been helpful in the literacy field as it brings attention to how distal policies, written materials, assessment instruments, etc. are networked in keeping things "as they are". Hamilton (2010) saw the connections between nodes in a network as sometimes tenuous and believed that their strength depended on the numbers of people, objects, discourses, and practices brought together. With such knowledge, Hamilton argued, those interested in change can assess where pressures might be most usefully brought to bear.

An interest in analyzing educational tools such as textbooks for their ideological content emerged decades ago in research on second language education and has continued today (Fleming, Bangou & Fellus, 2010; Gray, 2010; Lee, 2011; Xiong & Qian, 2012), but many classroom-based ethnographies, including our own (Dagenais, Day & Toohey, 2006), have tended in recent years to focus less on the tools students and teachers use in learning situations and more on social interactions. We are hopeful that ANT may help us chart new directions in second language education research, that it might provide us with ideas about how to change some aspects of learning situations, and that it may provide us with a "way to intervene" (Fenwick & Edwards, 2010, p. 1).

Shifts in Language Research

We, as well as many others, have observed changes in second language theory and research literature over the past few decades (Block, 2003; Dagenais, Day & Toohey, 2006; Gee, 1996; Norton & Toohey, 2001; Street, 1995) that have been said to signal a "social-turn" in the field. From a cognitive-psychological focus on individual language learning and discrete skill development, it has now become relatively common to recognize that individuals learn to use language in historically, economically and politically-situated circumstances in which issues of power, equity, access and so on shape that learning. However, sociocultural learning theorists dating back to Vygotsky (1978) have also stressed the importance of what they termed *mediational means*. Wertsch (1991, p. 12), for example, noted: "The relationship between action and mediational means is so fundamental that it is more appropriate, when referring to the agent involved, to speak of 'individual(s) –acting-with-mediational-means' than to speak simply of individuals". As an ANT analysis would insist, we would like to argue that a focus on the material means, the tools, used in second language learning must also become a focus of our investigations.

A recent Special Issue of *Language and Education* (Prinsloo & Rowsell, 2012) focuses on the use of digital tools in several global locations, emphasizing the importance of recognizing that the "same" resources are taken up in varied locations in various ways, and that resources shape and are shaped by local as well as more distal people, ideas, materials and practices. Another recent issue of the same journal (Tusting, 2012) gathers

together papers that examine the significance of the "particular sites in which literacies are learned" (p. 99), and again, how these "local sites are linked to and patterned by distant, transcontextual influences" (Hamilton, 2012, p. 170). This increasing attention to place and resources in recent language scholarship seems very promising and in our projects (described below), we have come to appreciate how central the material, non-human elements of videomaking were to what happened in each specific location.

As researchers familiar with sociocultural theory and second language learning, and with ethnographic approaches to fieldwork, we were interested in introducing a particular videomaking instructional practice in collaboration with teachers and EAL learners, to consider how these learners might be developing literacy practices, vocabulary, meta-awareness of narrative structures, and criticality about media-produced messages. We initially thought (and still think) that ANT would be helpful in a post hoc way to trace how curriculum committees, curriculum documents, school district policies, parental expectations, distribution of electronic resources in schools, and the like might have local impact on how appropriate literacy practices are defined in specific school networks, such that (we expected) videomaking might be seen as a peripheral, fun-but-inessential aspect of school activity. We have since come to believe that ANT offers us guidance in observing the video projects themselves, as they are being enacted. Before making an argument for the contributions ANT can make to ethnographic documentation we begin by explaining some of our motivations for using videomaking as an instructional practice with second language learners.

Videomaking Projects

Worldwide, children are familiar with video or television, at least from the position of viewer. Making video is less common in schools than analyzing video (which is, albeit not that common). A few researchers have recently explored how students who have experienced difficulty with traditional print-oriented literacy seem to interact more successfully with alternative media. Several projects have made videomaking possible for youth (Heron-Hruby, Hagood, & Alvermann, 2008; Rogers & Scholfield, 2007; Stein, 2004). While research has shown that students who have difficulty with print literacy interact more successfully with alternative media, the literature and our own observations – both in international locations and in Canada with Pacific Cinémathèque[1] – suggest that videomaking increases engagement, creativity, and use of varied cultural and linguistic resources. In videomaking projects with children since 2007, Toohey found, much like Li and McComb (2011), that "the use and production of videos by students provid[es]… university and K-12 students with motivating and authentic learning experiences across disciplines" (p. 67). Our experience and the general laudatory tone of the literature on videomaking with children led to the project we focus on here.

As already mentioned, we have undertaken videomaking with EAL learners in a variety of sites since 2007. Some of our projects were international (in Dharamsala, India and Oaxaca, Mexico), some were conducted in the greater metropolitan area in which we live. All the students involved were bilingual/multilingual EAL learners enrolled in elementary and high schools. Some projects were "in school" activities and others were

[1] Pacific Cinémathèque is a non-profit film society in Vancouver that offers, among other services, workshops to children and youth in video/movie making.

conducted outside school. Instructional arrangements also varied: in the international sites, student teachers from our university instructed the children in videomaking and assisted them in making videos, while in some of the local sites, either video professionals or the authors were instructors and/or facilitators. The international projects are described in more detail in Toohey, Dagenais and Schulze (2012). Our fieldwork practices were also various; in some cases we were able to collect ethnographic observations of video production, photographs, filming of the video production (which we consider to be process data), child-produced storyboards, scripts and videos, and at times, reflections and retrospective interviews with student-teachers or video facilitators. The video "process data" in the case of the international projects were quite thin, as student teachers were more focused on working with the children and not so much on documenting the process because of constraints in their time abroad. In some of the local projects, the process data are more robust and we have examined these data in some detail. As we prepare to embark on another videomaking project with children in a local site, we wish to learn from our previous experiences and have been exploring aspects of ANT to see whether it might be useful in guiding our fieldwork.

"Playing with ANT"

From an ANT perspective, any network of relationships may be endless. One of our first activities in considering how ANT theory might contribute to our work was to identify some of the human and non-human nodes in the local school-based networks of videomaking. These included (among many others) the students, the video instructor, the videomaking (as well as video viewing) equipment, film industry protocol, and the physical space of the school. Each of the nodes we identified connects with other networks, as indicated in Figure 1 representing only some of the multiple relationships between human and non-human actors in one of our videomaking projects.

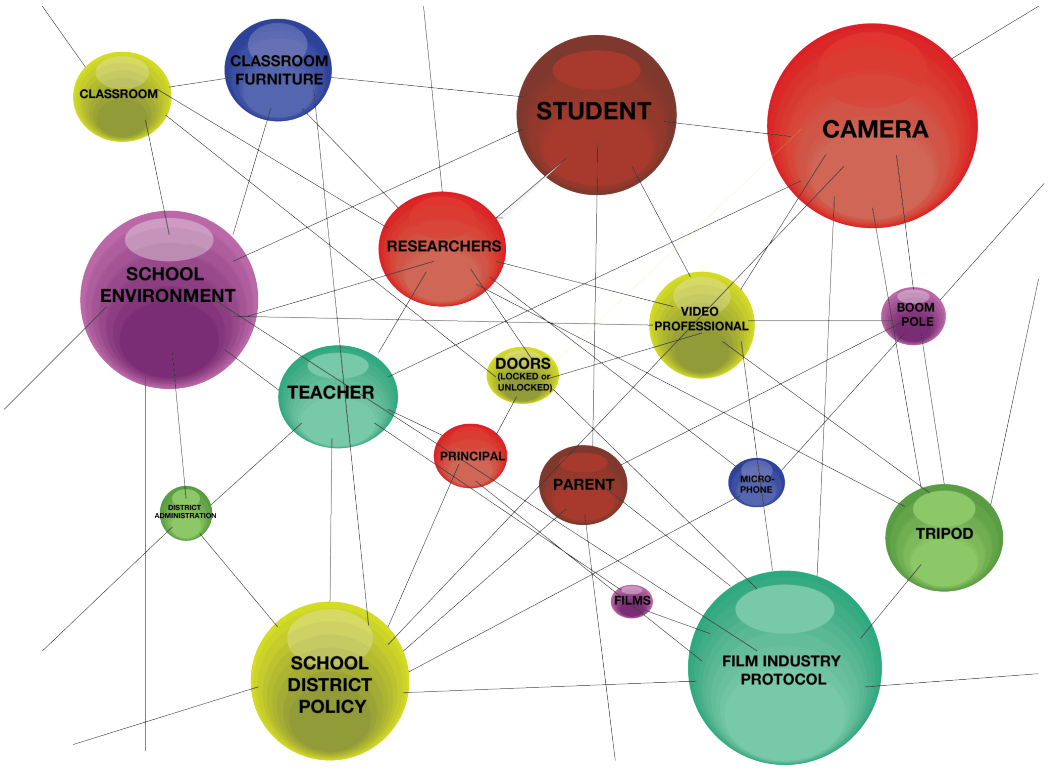

Figure 1: Videomaking at school network. This figure illustrates some of the relationships between human and non-human actors in one of our videomaking projects.

As we contemplated this complexity, we decided to begin our preliminary examination of some process data by zooming in on a manageable bit of the larger picture and to follow one thread in the network: the interaction between the cameras and the children. Interested in finding out what happens when the technologies used for videomaking – cameras, tripods, computers, computer programs, microphones and so on are introduced in classrooms, we wanted to explore how these non-human actors might change or affect established classroom networks in which participants more customarily use books, notebooks, blackboard, and pens. We imagined that it would be useful to examine the moment the cameras were introduced to the children to uncover what emerged from the contact between human and non-human actants. Latour (1987) used a camera as a prime example of "blackboxing," pointing out that it has a social and material history and that many people, ideas, discourses, and practices have formed more or less stable networks to produce what looks to be an individual entity – the camera. In the case of video cameras, their history, the conventions, and the practices that have developed around their usage in documentary filming, for example, have effects on how cameras are used in twenty-first century classrooms. Thus, while the nodes in our diagram seemed linked to others in two-dimensional space, it is important to remember that each node, like the camera, has been blackboxed and obscures other underlying networks.

The two examples below that illustrate how an ANT perspective informed our viewing of process data are excerpts of videoproduction activities conducted with children in Vancouver. We began to apply ANT by viewing a video showing the

beginning of a summer video camp. This "process video" was shot by a graduate student to document the process of the children creating *their* videos. The video begins with shots of the classroom in which students are sitting quietly at tables in groups while two instructors (video professionals from Pacific Cinémathèque) stand and present information about filming, giving advice on shooting techniques, and urging students to take good care of the camera equipment. Then a group of students rises, with one student carrying a camera, another holding an instruction sheet, a third manipulating screws on a tripod, and a fourth observing the others while one of the instructors provides more information. The video then cuts to a different setting, the hallway, where one of the instructors is holding a video camera as he provides more advice on shooting techniques to a group of children clustered around him. He encourages the students to rehearse the "actors ready, rolling, action, cut" sequence. While most of the group listens to these instructions, one girl paces up and down the hallway while holding the tripod. The instructor then hands the camera to another girl who walks down the hall to join the girl holding the tripod. To our dismay, this very brief shot of the two girls walking in the hall is all we see in this particular film of the first contact between the children and the videomaking equipment without an adult present. At that point the camera angle shifts to show us the instructor as he moves alone in the opposite direction down the hall and it follows him as enters a room to work with a second group of students so that we never see what happened afterward in the first group.

Other ethnographers will be familiar with reviewing fieldwork data and lamenting the fact that an observation ends, or the digital voice recorder fails, just when things start to get interesting (in later analysis). By following the instructor instead of the children as they start to work with the equipment, we missed seeing the network that was created after the instructor left, when the students worked independently with the camera. From an ANT perspective, we might have better followed the video camera in interaction with the children to document *how* a new network was created independently of the teacher's supervision when students were allowed to take a more active role in shaping their relationship with the object (the camera). We missed seeing how children transitioned from learners to users of technology, and how, in this process as Fenwick and Edwards (2010) suggest, the objects might "exclude, invite and regulate particular forms of participation" (p. 7). It is this process, in our case the use of the videocamera, that allows students to form, develop, consolidate and defend their networks of learning.

Fortunately, we do have other process video that shows other networks where the children were in interaction with the camera on their own and we provide here an example of how ANT guided our viewing of one of these clips. This process video was shot by a videographer from Simon Fraser University, Linda Hof, who has decades of experience videotaping children in schools, and the high visual and audio quality of the clip makes it particularly compelling. This project, facilitated by Toohey, was an in-class special project conducted with a group of children interested in making a video. While the excerpt we discuss is not the children's first interaction with the camera, it is an instructor-less interaction around the camera involving children. In this excerpt, we see a shot of two girls and a boy clustered around the LCD screen of a camera mounted on a tripod on a residential street near their school. Some days before, in an attempt to

minimize the disputes children engaged in as they made the video[2], Toohey explained to the children that on professional shoots, individuals had roles: the person who was the "Director" could not be contradicted, for example, and the children agreed that they would rotate roles in various shots. The Director wore a labeled baseball cap, the "Camera Operator" had the camera, and the "Continuity Person" had a clipboard with the children's storyboards. In this excerpt, we hear the boy instruct the girl who is holding the camera "You don't have to say 5, 4, 3, 2, 1", a film convention for getting 'empty' footage before a shot actually begins. The girl in the Director's hat looks at the boy and replies, "Yes, she does. She has to say 5, 4, 3, 2, 1" (accompanied by finger pointing). The boy then leaves. Then the Director tells the camera operator to leave the camera in a wide shot position for the next scene, explaining that this is "because we want to get the background in". The girl behind the camera follows this direction and as this clip ends, we see her pick up the camera mounted on the tripod as she moves to another location to shoot the next scene.

Many questions occurred to us as we viewed this video segment, and we wondered: Had the assigning of one child to be Director (although children rotated roles as Director, Camera Operator; Continuity Person, etc.) constrained learning opportunities for other children? The assignment of power to the Director solved one problem (for Toohey), but this construction of authority (signaled by the baseball cap—another node in this network) prevented other possible constellations of participation of the children with the equipment. At the same time that Toohey wished to lessen the children's arguing, she knew that setting up hierarchical power relations was contradictory to the aim of children collaboratively making video. Was copying relations among video and filmmaking professionals (at least what we imagine such relations to be like) necessarily helpful? Could other means be found for problem-solving and decision-making in these matters?

Another question that emerged from this excerpt was: How does the filmic language used by the children contribute to learning about video production and how is it used to distribute power among the children in this network? The boy suggests that the protocol of backward counting is not necessary, but the Director insists that it is necessary and her claim wins the day. These children were previously introduced to videomaking by video professionals (at a video camp earlier than this episode facilitated by Toohey) and the appropriation of this protocol and other filmic language ("background", "wide shot") may also have contributed to particular forms of participation.

We noted earlier that Law cautioned that ANT-informed research is messy "because that is the way the largest part of the world is – messy, unknowable in a regular and routinised way" (Law, 2007, p. 595). The questions and 'unknowables' (at least at this stage in our research) that arise from this very short excerpt of process data illustrate the complexity of this kind of research. Although temporary and easily disrupted, a learning network with particular affordances and constraints is created here. From a

[2] Having limited time to make the video, Toohey was concerned that the prolonged arguments children were continually having with one another about how to set up shots, who should be included in a shot, what actors would say (as scripts were ignored in favour of improvisation), and so on was using too much time.

language learning perspective, we see in this video excerpt that the children are negotiating their understanding of the videomaking process as they manipulate the equipment and speak from positions of authority using a filmic language that they have appropriated through their interactions with the video equipment and the videomaking professionals. While it is obvious that the students have appropriated the stages of their enrolment in the network, it is interesting for us to observe *how* they distribute, facilitate and limit those roles in conjunction with the video equipment and their peers. In our ongoing analysis, rather than focusing only on student-student or student-teacher interactions, we will be examining the interaction between the children with the video equipment (the human and non-human actants) in the hope that it might help us identify *how* interactions change in schools when new tools like video equipment are introduced, and consider what consequences this has for language learning.

Conclusion

We hope to engage in a more finely-grained ANT-informed analysis of our process data in the next phase of our research and in the meantime, have provided an indication of what ANT might suggest for our strategies for observing children videomaking. ANT directs us to investigate human and non-human elements in heterogeneous networks, and to recognize the complexity of why things are the way they are. We have, with this initial "play" with ANT, discovered that we need to pay attention to how the non-human elements of the videomaking networks we set up with children, might have observable effects on interactions. We have further been alerted to the possibility that if we know more about school-located videomaking networks, we might better persuade others that such activity is worthwhile, not just fun. Clarke (2002) stated:

> I want to propose a research agenda that… challenges the hegemony of literacy… and this means asking how else could things be done. What human, technological, conceptual or material resources can be substituted for the written word and what would be the effects of enrolling these resources in a particular network? (p. 119)

We wonder if and how videomaking in schools might disrupt hegemonic print-oriented networks and change EAL children's language learning experiences. Particularly, we are interested in investigating how the equipment functions within a school videomaking network, examining what connections they establish and transform. And, of course, we wish to explore the kinds of language practices that are enabled through children's interaction with the equipment.

While in *Erewhon* modern technologies and their champions were suspect and dangerous, in today's schools such technologies are sometimes seen as frivolous and unhelpful for teaching children the "gold standard": print literacy in an official language. We hope that we have here provided some ideas that might encourage others to look more carefully at the digital technologies children seem so interested in, to explore the affordances and constraints of such technologies, and their potential to shift relationships between learners and their environment to enhance language learning. We wonder how schools might have to change to make such linkages possible and hope that aspects of ANT will help us understand the barriers to such change, and perhaps, how those barriers might be broken.

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