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I'm deleting as fast as I can: Negotiating learning practices in cyberspace

Learning in and through work is one of the many spaces in which pedagogy may unfold. Web technologies amplify this fluidity and online learning now encompasses a plethora of practices. In this paper I focus on the delete button and deleting practices of self-employed workers engaged in informal work-related learning in online communities. How the relational and material aspects of online pedagogical practices are being negotiated is explored. While deleting appears to be an everyday practice, understanding the delete button as a fluid object in fluid space begins to illuminate its complexity and multiple enactments. Deleting practices which work to stem the tide of information pushing itself onto screens, as well as those practices that attempt to delete traces left behind on screens and 'in the cloud', are examined. Actor Network Theory provides the theoretical and conceptual tools for this exploration. I conclude with observations on the politics of the delete button and implications for more sophisticated digital fluency in everyday pedagogy.

Key words: work-learning; online communities; actor network theory; online learning; adult education

Materiality and Assemblages Online

Learning in and through work is one of the many spaces, outside the auspices of formal educational institutions, in which pedagogy may unfold. Pedagogy in such spaces is fluid, assuming multiple shapes depending on the networks of people, ideas, texts, resources, and practices mobilized. Web technologies amplify this fluidity. With everyday use of smart phones, iPads, and social media such as Facebook and Twitter to tap into podcasts, wikis, and blogs, pedagogical practices are increasingly intertwined with the web. Given the proclivity of web technologies to blur boundaries between work and learning spaces as well as facilitate spatial and temporal re-orderings of sociomaterial relations, these 'other' pedagogical spaces warrant attention.

The complexity of work-learning practices in online spaces should not be underestimated. Engaging in online collectives and networks is different than conducting a Google search or reading a Wikipedia entry, and is not always as simple as posting a question or reading a reply. It is therefore important to tease out the *specificities* of entanglements between people and technologies in particular practices. However, things are often overlooked rather than enlisted as important participants in research projects. Waltz (2006, 57) writes that mythologizing the internet with claims that it revolutionizes social intercourse 'inhibits a more careful accounting of how nonhumans interact with the full scope of other participants with which it is involved'. Waltz's statement reflects the contemporary turn to the relational and material. Postings, avatars, archives, Facebook profiles, viruses, an online CV, Google, computer screens, the delete button: online learning practices are caught up in, and shaped by, artefacts such as these.

New technologies are believed to contribute to more connected ways of knowing and learning. Yet, it is the practices, or to use Young's (2006, 257) phrase, the 'sociality' *around* Web2.0, not the properties of the technology itself, which drives this reconfiguration of ways of

knowing. Often labelled the participatory web, Web2.0 ostensibly offers openness, user control, bottom up construction of knowledge, sharing, and collective intelligence. But access to social media applications will not automatically transform someone into a knowledge contributor. It is only when these new technology objects link to other objects and people—*creating new socialities*—that there is potential for these networks to generate new ways of knowledge creation.

New socialities raise questions about the spatial and temporal reorganization of information as knowledge and knowledge building practices become more fragmented, anxieties about connectivity, and the need for more critical examination of human-technology entanglements. For example, Levy (2007) muses that many people now worry about technology's unwanted effects on everyday life: information overload, speedup in work practices, and interrupted styles of working. Despite such anxieties, there is a push to 'keep up'. Anderson (2007) cautions that with so many different ways of accessing information online, people may worry that they do not understand or use all of these media, leading to anxieties about whether they are as fully connected as they *should* be. Beer (2005, 7) argues that digital technologies have become so embedded in our everyday lives that they are often camouflaged and he urges a more reflexive approach toward digitalization. It is timely to ask how these everyday material relations are being negotiated.

In this research project I explored how self-employed workers experienced informal work-related learning in online communities. The online communities of interest in this study were spaces *outside* the auspices of formal courses: organic gatherings of people online formed because of an interest in exploring a topic with others. Professional associations, workplaces, and commercial enterprises may also nurture such spaces. As my research progressed, questions emerged about how the relational and material aspects of these pedagogical practices were being navigated. One 'thing' of interest in my study became the delete button. In this paper I draw on Actor Network Theory (ANT) to explore the enactment of deleting and ambivalences created for work-related learning practices online. ANT is well suited for studying complex and mobile practices which take the pervasive role and energy of objects into account. Such examination will help to highlight complexities and tensions of online learning for possible re-thinking and interruptions on the part of adult educators and worker-learners. I begin by exploring key tenets of ANT and how these guided the research approach. Next, delete button assemblages are unraveled and include those with the particular role of stemming the tide of information pushing itself onto screens as well as those assemblages addressing the specificities of deleting persistent traces left behind on screens and 'in the cloud'. I conclude with observations on the politics of the delete button and implications for more sophisticated digital fluency in everyday pedagogy.

About ANT

Law's (2009a, 145) statement nicely introduces the 'intellectual concerns' of the actor network tradition: 'precarious relations, the making of the bits and pieces in those relations, a logic of translation, a concern with materials of different kinds, with how it is that everything hangs together if it does'. ANT is a collection of relational and material understandings, concerned with associations between human and non-humans in day-to-day practices. Described

as a theory, philosophy, approach, method, sensibility, and/or toolkit, ANT is not easily pinned down. Recently, Law (2009a, 141) depicts ANT as a 'disparate family of material-semiotic tools and sensibilities'. For others, such as Latour, it is an object-oriented philosophy. Similar to Fenwick and Edwards (2010, 1-2), I acknowledge the diversity of ANT thinking and use the term ANT as a 'temporary marker' to refer to a 'constellation of ideas'.

ANT advocates that objects, such as grass can do things in the world, just as atoms and Popeye do (Harman 2009). ANT focuses on connectedness. Actors—human or non-human—are co-constituted in these webs of relations. An object, for example, is what it is and does what it does because of the retinue of relations in which it is entangled. Hence the phrase *actor-network*. Borrowing from Callon (1987), an actor-network is both an actor (which networks) and a network (which can act). As researchers 'follow the actors' they look closely for "mediators *making* other mediators *do* things" (Latour 2005, 217). As such associations are traced, a network is outlined.

Sociomaterial sensibilities suggest that it takes both human and non-human actors to enact any practice. Introna (2007, 14) writes that technologies 'fold into us as much as we fold into them'. Think about a consultant with a cell phone, a gardener and his shovel, the doctor and her stethoscope. People and objects are co-constituted through the other. Suchman (2007, 286) concludes that it is not about 'assigning agency either to persons or to things but to identify the materialization of subjects, objects, and the relations between them as an effect … of ongoing sociomaterial practices'. Attention focuses on the assemblage.

Yet, being interconnected is not enough. It is the movement, flow, and changes that are of interest (Latour 2005). Through such work, Latour (1988) argues, both human and non-human actors create new sources of power and legitimacy as they renegotiate who is acting in the world, who matters, and who wants what. It is through a series of translations that actants become linked together. Fenwick and Edwards (2010, 12) describe translation as the happenings at each micro-connection in a network. Some of these connections, and the configurations they generate, stabilize and last for awhile. Others are more fleeting. ANT is interested in how alliances come to be and how actants end up juxtaposed with others. It asks: How has this collection of actants come to be assembled? Or disassembled? Or re-assembled differently? Associations are entered willingly, under coercion, or unknowingly. While actants are joined together, 'stuff' (ideas, practices, actions, intentions, invocations) circulates in the conduits. ANT researchers are interested in these circulations.

Although ANT is not a learning theory, by studying the specificities and materialities of particular webs of relations, researchers can understand how knowledge production and pedagogical practices are enacted in dynamic and multiple networks. Michael (2000, 25) writes that 'imbroglios of humans and nonhumans are becoming increasingly part of our everyday life'. This relationality leads Edwards and Usher (2008, 92) to suggest that it is useful to articulate the learner as a 'hybrid subject shaped by other networks and flows in which they are enfolded'. Learning, if it occurs, is a network phenomenon.

Methodological Notes

In an effort to bring web-technologies to critical inquiry, they were treated as participants in this study. The participant list therefore included the delete button as well as postings, avatars, tool bars, emoticons, archives, online profiles, viruses, hyperlinks, passwords, RSS feeds, and Inboxes. Human participants in this study were own-account self-employed workers (contractors and consultants without staff). Semi-structured interviews, which varied in length from one to two hours, were conducted with 11 self-employed workers to explore how they engaged with others in online spaces. They ranged in age from 35 to 51, had been self-employed for 6 months to 21 years, and worked in a variety of fields: consultants (in international development, organizational change, leadership development or occupational health); the learning field (e-learning designer, corporate trainer, sessional university instructor); one was a sport psychologist, another was a graphic artist, and another a daycare provider; two were entrepreneurs in the midst of (re)defining their business. Pseudonyms were assigned to protect the anonymity of human participants. The size of the online communities discussed by participants ranged from 20 people to several thousand. Technologies used included ListServs, discussion boards and forums, Yahoo groups, e-mail, blogs, and RSS feeds.

Interviewing Objects

Regarding the nonhuman participants, Michael (2004, 20) argues that entities should not be 'spoken "about", "for", or "of"'. Instead, the researcher 'speaks "with", "by", "through", and "as" these entities'. Therefore, my task as researcher was to collect data *with* these objects. Is it possible to 'interview' an object? Cathy Adams and I refer to the etymological origins of the word *interview*. It derives

> from the Old French verbal noun *s'entrevoir*, composed of two parts: *entre-*, meaning mutual or between, and *voir*, to see, which together mean "to see each other, visit each other briefly, have a glimpse of". Thus to "interview" an educational artefact, is to catch insightful glimpses of the artefact in motion, as it performs and mediates the gestures and understandings of its employer, involved others, and associations with other objects. (Adams & Thompson in-press, 2)

I developed several heuristics for 'interviewing' objects: follow the actors, construct co(a)gents, study breakdowns and accidents, and untangle tensions (see Adams and Thompson in-press; Thompson 2010). These heuristics are not a prescriptive approach (which would be rather anti-ANT-ish), but instead an articulation of how I used several ANT concepts to engage objects of interest in my study. In this paper, I 'interview' the delete button, an actor-network which knits an array of human and non-human entities together. Although an object—such as the delete button—provides an entry point for a researcher, these heuristics necessarily focus on the 'connected' object or as Bruni (2005, 358) describes, the 'relational game in which objects are involved (and which objects themselves activate)'.

Briefly, Latour (2005) advocates 'following the actors', noticing what an actor—*either* human or non-human—is compelling other entities to do. Interview questions in this study, therefore, probed what the delete button might be compelling other entities to do or what other actors compel the delete button to act. For example: How are people and objects brought into proximity with each other? Which people? Which objects? How did they come to be configured this way? What was disrupted or stabilized to make this happen? What is circulating? What is the

effect of this set of relations? What value is attached to this assemblage? Although I find 'following the actors' to be a useful starting point for sorting out the configuration of assemblages, there are some concerns that it might oversimplify the process. For example, there is shift among ANT theorists, such as John Law (i.e., 2004), to explore what is not present—the invisible or the other—which may be overlooked if the focus is only on the actors at work in the network. Drawing on the other heuristics enables a more layered approach.

Another heuristic is Michael's (2004) notion of a *co(a)gent*: humans and non-humans operating together to produce patterns of connection. Using this concept, researchers can trace the connections that comprise different co(a)agents. Michael (2000, 42) explains that deploying this analytical strategy is a move away from following the actors, and instead focuses on following the hybrids, which assumes agency to be 'distributed, pluralized, contingent'. This is an important ontological shift. In this study it is, therefore, the delete button *assemblage* that is of interest.

Another strategy for catching glimpses of objects in motion is to study accidents and breakdowns. Michael (2000, 24) comments that when intermediaries break down 'we suddenly become aware of their mediating role: all the work … [and] arrangements that enable them to be ordinary, invisible, become spectacularly apparent'. Asking, 'What happens when the delete button does not work?' or 'What if there was no delete button?' leads to many openings. As Latour (2002, 229) questions in his analysis of a door, 'every time you want to know what a non-human does, simply imagine what other humans or other non-humans would have to do were this character not present'(or working properly, I add).

The fourth heuristic highlights how both stabilizations and disruptions are a necessary tension. Paying attention to efforts to stabilize *and* disrupt networks is another way to catch a glimpse of objects in interaction and helps to map contradictions and incoherences. The delete button does not work alone and so the researcher may be interested in attending to the sociality around the object: How does it smooth, complicate, and/or disrupt online learning practices?

It is a challenge for ANT researchers to bring objects out of the background and foreground their voices—analytically and in texts. Although ANT-based research generates accounts of assemblages which include both objects and people, whether representative symmetry is possible is debated. Nevertheless, attempting to interview objects by attending to the interactions between these objects and other actors does de-centre the human by introducing different perspectives. Data which describes what objects do when they are entangled and implicated in learning practices with other actors brings their "voices" to the fore, in some fashion. These voices then co-mingle with human actors' descriptions of how particular objects figure in their practices.

The Delete Button

Workers in this study reported that they were engaged online in order to learn: connecting with others to gain from their experiences, exploring new ideas, and accessing information. 'Keeping up' and 'staying on top of things' were familiar refrains. 'Taming' the unruliness of the

web and its reputation for distraction were overriding concerns. There appeared to be a thin but fluid boundary between information-rich and information-overload, between control and chaos. Managing this boundary was a critical aspect of their learning practices. And so, the worker-learners in this study became entangled with the delete button, deleting the non-relevant, non-credible, annoying, threatening, and sometimes (by accident) the useful.

It seems the delete button is something we click when we want to get on with things. Sometimes it might volunteer to delete things for us. It even talks back: asking if we are sure we want to delete something or confirming when we have. It can speak with clicks, texts, and on my computer, with the sound of crumpling paper. It is more than a tool. As Aanestad (2003) explains, the capacity for action is relational rather than embedded in particular elements. The delete button makes things happen by enrolling other actants: coordinating with other 'digitalia' and people. When we accept its invitation, humans enter into a sociomaterial assemblage: we are 'deleting' and we could not do this without our delete button. We become—what I have labelled in this study—the *deletebutton-learner*. The delete button is not just a button ones presses on their mobile phone screen or computer keyboard. Similar to Michael's (2004) co(a)gent of the couch potato as a hybrid of person + couch + remote control + TV, the deletebutton-learner is a hybrid assemblage of person + delete button + digital device + online digitalia. Here, digitalia includes texts of every sort, video, audio, images, and database information; self-created or promulgated by a third party.

Deleting What's Pushing Itself on the Screen

> Ryan, an occupational health consultant, pulls out his Blackberry. Let's see if anything is in my Inbox. I checked before I came so there might not be anything. Here's one. Smith. I recognize the name because he posts fairly often. So I look at the name. And then what I'll do is I'll look at the subject. What Smith is writing about is the International Journal of Occupational and Environmental Health. Normally I'll look at just the subject first and if it's something I'm really not interested in I'll just delete it. I won't even read it no matter who it is from. So usually I'll look at the subject line first. If it looks like something that might look interesting then I might read it. Typically the posts are fairly short so they're not these huge long things you have to read. But if I'm really busy then I'll just hit delete.

Ryan's fingers hover over the delete button as the subject line, author, and the clock are consulted before time is spent with a posting. Postings are usually texts but can be videos or images. They are often accompanied by attachments or weblinks and sometimes embedded with graphical and animated elements, even viruses. Some postings mobilize the delete button as they appear on screens. Others are savoured, read intently, or saved.

People delete with glee and guilt, gingerly or generously. A person may delete without even reading the posting. They may delete everything by a particular person they do not care for as Sophie sometimes does:

> We are respectful of each other's time so we don't tend to whitter on about nothing. But you do find the odd person who does that and then you get to recognize that name and say, I'm not reading that one. There may be a nugget of something in there but it will be

> wrapped in something that I just can't be bothered to sift through. … I read pretty much everything except one person who is fairly irritating. Sometimes if I'm feeling like I've got time I'll read it but I just get re-irritated.

The assembly of other actors gathering around the delete button grows: names, a track record for 'whittering' on, 'noisy' postings, irritating personalities. The delete button relies on objects such as these. But they are finicky. One day an interesting subject line staves off the delete button but the next day, when time is tight, even an interesting posting gets deleted without being read. Parts of postings become specificities, shifting in their ability to influence the network. The delete button assemblage is nimble: the assembly of actors in flux as decisions are made in seconds.

Follow the flow, says Latour (2005, 237): 'Object and subject might exist, but everything interesting happens upstream and downstream. … Follow the actors themselves or rather that which makes them act, namely the circulating entities'. What is happening further up and down the chain of action? Well, there is often too much information or the wrong sort of information. The delete button emerges as a line of defence against information overload, which Himma (2007, 266) describes as 'access to more information than is conducive to human wellbeing'. The delete button culls through the myriad of online postings that present themselves onscreen so that attention is directed to the relevant, credible, and worthy. The delete button is also called into action when the workers in this study feel overwhelmed by all the 'stuff' staring them in the face when they login. Or, it may be part of a methodical disciplining of one's Inbox; a matter of 'cleaning house'. Oliver explains:

> As well three online groups I have probably 10 RSS feeds that I read pretty much on a daily basis. When I say read, I just scan the headings. If something looks interesting then I'll read it but otherwise I'll just delete it. You have to become disciplined in what you read. … I know that if I subscribe to a new RSS feed then I really should delete an old one in order for it to be sustainable. Otherwise it will just grow and grow. I'm pretty ruthless. If stuff comes in that isn't relevant the delete button gets hit without any thought. My Inbox has not scrolled for many years. At the moment I have three or four messages in my Inbox. I set up filters for things so they don't appear in my Inbox if I don't want them to. I've seen Inboxes with 100's, if not 1000's, of messages in them. I don't know how people can operate.

The delete button enrols other actants as needed to get the job done. It communicates through digital codes, coordinating with other bits and pieces of digitalia. Oliver delegates deleting work to filters so he never even sees postings and there is no need to press the delete button: a kind of 'pre-deleting'. One of Ben's online communities enlists ratings to restrict the flow of online commentary in a similar fashion:

> The community rates each other. If you post something and somebody doesn't like what you post they can give you, for example, a -2 for that comment. So you can say, "I want to hide all the negative comments". You'll then see a line with a person's name but those comments with a negative rating (i.e., -2) do not open up.

For Oliver, the number of messages in his Inbox has been translated into a barometer of his 'ruthless' self-discipline: three or four is a favourable measure of efficiency. The delete button has become a workhorse with a moral mandate to keep things in control, to be efficient, and to stem the flow of undesired objects or people. It works to direct attention to that deemed important and timely, briskly moving away that which is not. Operationally, it is extremely sensitive to small changes in what other actors are doing. All it seems to take is an uninteresting subject line, a filter, a rating, skewed number of messages in an Inbox, or a busy person.

The delete button makes things happen. But it does not act alone and there are already multiple ways for choreographing these practices. So far, the delete button can act like an *eraser*, helping to create uncluttered spaces conducive to 'learning' work. This actor-network also seems able to function as a *valve* to mediate between a person and the online world: stopping or re-directing the flow of digitalia and attention. Presencing and absencing other actors—digital objects, people, web technologies—configures spaces for pedagogic purposes. Such material practices around the delete button shape interactions with information and enact online learning practices in particular ways. These ongoing negotiations enact an array of relations between a person, their delete button and its entourage, the screen, and online digitalia. What would these self-employed workers do without a delete button? Objects continually press into the network. Because people have this feature on their digital devices and can become 'delete-ers' it seems that the deletebutton-learner is deemed able to cope with all that comes their way. Here is a particular pattern of relations that legitimizes the onslaught.

Deleting What's Left Behind on the Screen

Postings—texts, images, videos—are not the only things deleted in the flow of online learning activities. Occasionally, these worker-learners 'deleted' themselves, opting out of online spaces or trying to remove traces of themselves online. Now, the delete button assemblage stretches and even mutates as it becomes entangled in other actor-networks.

The deletebutton-learner navigates the waters between managing the online interactions and opting out. But sometimes the delete button is not enough:

> There was one nursing group that I was in with 20,000 members and I probably got 100 e-mails a day. So you hit delete, delete, delete, delete. But then what's the point of belonging if you just hit delete? Sometimes you don't have enough time so you just sign yourself off for a bit. All you do is send an e-mail to the ListServ and they remove you from the list.

More complicated practices ensue when the delete button meets the digital footprint. This study focused on the particularities of engaging with others in online communities. In order to make an online space conducive to learning, people share. Making postings, distributing self-created content, and disclosing personal information is common. The creation and circulation of such digitalia is facilitated by the capabilities of Web2.0 technologies and the rhetoric of user-created content, social networking, and community that celebrates openness and collaboration. The digitalia that become part of (in)formal learning experiences often have the capacity to reverberate in other spaces and networks; perhaps in unintended ways. Such digital objects are fluid: not confined to one space or time, juxtaposed with other things in limitless ways, shifting

and adapting as they are entangled in other networks. Some participants were aware of the social life of their digitalia. Others not.

Although Dorothy had been active in online communities for 12 years it was only in the last year she realized that she if she Googled 'dotcare' (her online name and also the name of her home-based daycare business) any online conversation she had ever had would appear.

> What did I know? I went onto this hysterectomy board for information and support, not realizing it is a public board. And there were even postings from when I went online looking for help dealing with bugs in my tree. … I have never given out my phone number online. But I had this one woman calling me. I didn't know who it was. And I thought, "How the heck is anyone getting my phone number?" And she's calling me by my handle [online name] on the phone. She was being really obnoxious and it freaked me out. That was my first indication that somebody could actually find you.

Dorothy's online name, used everywhere, made such connections easy. The assemblage of the online footprint via a Google search does as intended: it gathers, orders, and displays. Postings in a hysterectomy support group, a gardening site, and her business-related online daycare forums mingled together. Dorothy was generating a digital footprint (including her phone number) that she was unaware existed.

One's internet presence—the places you have been and the things you have said, done, and shared—is amalgamated and translated into a *digital footprint*. Public and not easy to alter, I suggest that a digital footprint is a hybrid of person + screen + digital artefacts + web archives + search engine results. Madden et al. (2007, 4) explain that 'being "findable and knowable" online is often considered an asset in participatory culture where one's personal reputation is increasingly influenced by the information others encounter online'. Without engaging with an array of objects and web technologies it is impossible to be someone who is connected online. Boyd (2006, 14) states that 'from the flow of text in chatrooms to the creation of Profiles, people are regularly projecting themselves into the internet so that others may view their presence and interact directly with them'. Opting out online was not an option for these self-employed workers.

As these self-employed workers explained, it is logical to expect that potential clients or partners will Google you. Most people Google themselves occasionally to see that version of their digital footprint. Madden et al.'s (2007) survey research indicates that within the 11% of adult internet users in their sample who have jobs requiring them to self-market themselves online, 68% conduct searches on their name to keep tabs on their online footprint. The prevailing business discourse celebrates the value of a well strategized online presence. For example, Deal (2008, para 7) rails against 'allowing the flotsam and jetsam of cyberspace to pack your footprint'. According to Deal (and representative of the current discourse), the ideal online footprint should be a penetrating web presence which includes not only self-generated digitalia but a smattering of third-party views on you and your services or products.

Elsewhere I reported on the uneasy passages which ensue as digital trails, online security, and tensions between public-private exposure are navigated (see Thompson in-press). In this paper, I explore what happens when the assemblage of the online footprint, a complex actor-

network, becomes entangled in the everyday practices of deleting. Consider Lee, who is comfortably enmeshed in a close-knit online group. This is one of his most useful learning spaces:

> One day he opens an attachment from a new community member only to discover it is loaded with viruses that proceed to attack his hard drive. The attachment also contains personal and private information about him. He spends years trying to erase all records of his identity on the internet. Lee explains: It's taken up until now to remove it because at that time if you were to do a Google search on "Lee" you'd get 10 pages all with links related to stuff I had posted or developed. So I went through and took my name off the web pages I had developed and I unsubscribed from discussion boards, cancelled my business name, my business web site, and my domain name. It took a long time. I totally cut back on my online presence and now I keep a very low profile.

For Lee, artefacts strewn over the Web now seem to reveal rather than just share—they have become things that need to be hidden, destroyed, or managed. Information is translated from something that is shared, in order to build a connection and learn with others, into something that reveals. Deleting practices become more sophisticated. Enrolling and enrolled by web archives, the Wayback Machine, web administrators, domain names, websites, and Google, the delete button actor-network stretches. And despite the uncertainty of actually being successful in this deleting mission, there does seem to be a way to measure success. Just as four messages in Oliver's Inbox confirm his self-discipline, the number of Google pages generated by a search on Lee's name is translated into a measure of the publicness of his profile, which is then carefully monitored.

Mia is also conscious what a Google search of her name reveals. Active in several online communities to prepare her for her next career move, her digital footprint has a sense of purposeful construction:

> I don't use my own name on the [43 Things] site. And the picture that I use isn't the picture I use anywhere else. So it's my private space that I don't share with anybody I know. Because Facebook is searchable on Google I wouldn't put anything on there I wouldn't want to share with everybody. I do worry about people if they want to check me out by googling me. I don't want the inane chatter on there because I don't think in a professional context that it would be particularly helpful. I don't want to be that revealed.

Images and online aliases she does not use anywhere else are enlisted in order to maintain a high degree of anonymity in these online learning forays. Mia is *obfuscating* her online presence. Brunton and Nissenbaum (2011, 13) describe obfuscation as 'short-term misdirection'—the addition of noise (i.e., aliases, false information) to data streams to add ambiguity. Unique images and aliases are enrolled into Mia's digital footprint so she does not have to mobilize the delete button in the same way as Lee. Mia and her delete button are negotiating a different relationship.

All three of these workers are involved in different enactments of deleting. Mia works hard to stay anonymous, sometimes muddling her online presence with additional actors so that she does not need to delete. Lee has actively deleted much of his online presence—removing actors—and now keeps a much lower profile. Alarmed by her anonymous caller, Dorothy opts

out of several online groups. In her daycare provider group, which she moderates, she asks that the discussion board be made private and so a new assemblage of actors, which now includes passwords and a fresh membership list (with many names deleted), is configured to enclose the space.

Hard work happens when the delete button meets up with the online footprint. Deleting an uninteresting or annoying posting takes seconds and can occur many times in a day. It may even be partially automated. Deleting one's online footprint can be an arduous process that takes months and might never be completed. The internet does not have a singular delete button. Instead, complex assemblages of human and non-human actors must be configured.

Constant and Fluid

The delete button appears to be an *immutable mobile*. Latour (1990) describes an immutable mobile as an object which maintains its form thereby fixing ideas (and practices, statements, actions) in place so that they can circulate and mobilize other networks. If you wish to delete something onscreen you click on the delete button. Its relations with other objects and people have coalesced to the point that it has become predictable and reliable: it has solidified. Latour (1987) explains that when many elements are made to act as one, a black box is created. The complex work going on to keep an assemblage together and functioning becomes invisible. Introna (2007) states that decisions and actions are often delegated to technology because it is convenient or necessary. For example, Chesher (2004, 3) explains that when a person clicks on a hyperlink 'an unimaginably complex set of events' is translated into an apparently simple task. Similar convenience is offered by the delete button. Indeed, there are online groups dedicated to sharing personal stories about 'loving the delete button' (i.e., www.experienceproject.com/groups/Love-The-Delete-Button/111561). Perhaps it is the black boxing of the assemblage that is inviting. Documents, videos, e-mails, and contacts are deleted onscreen with the same ease. One does not need to think about the complex orchestration of software, hardware, networks, codes, and commands working behind the screens. As an immutable mobile, the delete button is familiar, mundane, accessible.

However, Law's (2009a) conceptualization of *mutable mobiles* opens other possibilities: objects that reconfigure themselves, different realities loosely rather than rigidly associated, and multiple actor networks. Law and Singleton (2005) describe mutable mobiles—*fluid objects*—as defined by a set of relations that gradually shifts rather than holding itself rigid. The delete button also fits this description. Fluid objects, according to Law and Singleton, are spatial forms that are different and yet partially connected. The delete button is implicated in efforts to manage, minimize, obfuscate, exclude, direct attention, prioritize, order, dis-order, and re-mix. It takes on different configurations as it enacts practices such as erasing; re-directing flows of information, people, and ideas; throwing up screens; and shredding revealing information. We have already seen how no single assemblage can do all of this. It is a multiplicity of configurations, negotiations, and effects. Each of these practices becomes a different 'assemblage of relations' (from Law 2009b, 2).

But objects can be more suddenly and markedly different. Law and Singleton (2005, 343-344) call these objects *fire objects*. Made in disjunction, fire objects 'juxtapose, distinguish, make and transform absences and presences'. Fire objects jump and are discontinuous. Could the

delete button be a fire object? The different practices just described are not merely a gradual re-shaping of relations but abrupt divergent assemblages. The delete button is in constant negotiation with absence and presence. It brings to presence the worthy, credible, and relevant by absencing that which is not. Sometimes it even anticipates what might appear onscreen (absenting the not yet present). As an assemblage of many actors, it helps to direct what appears on screens and what does not. Or what stays on screens and what gets quickly wiped off. It has become one of the arbiters of digital inclusion and exclusion. It takes the shape it does because of what is absent and present in online learning spaces while also doing its work to absence and presence other entities. This object no longer seems so mundane.

Extremely sensitive to what other actors are doing and what is happening in other networks, the delete button looks to be both constant and fluid. Indeed, Law and Singleton (2005) argue that some objects need to change in order to stay the same. Perhaps this is not surprizing. Ways of being online are constantly changing. Deleting practices must follow suit. To keep working as a delete button it must be innovative and strategic, adapting to changes in web technologies; new forms of digital artefacts; more sophisticated data processing, profiling, and surveillance processes; more persistent and persuasive push technologies; and new demands from human actors for more, better, and personalized information. And then it has to educate its users—the other actors in the network.

The Politics of the Delete Button

The delete button and its entourage delivered multiple performances in this study: acting as a line of defence against information overload, arbitrating relevance, serving to presence and absence other actors, safeguarding against intrusion, and both opening and enclosing spaces. As the delete button assemblage was mobilized to take on specific roles in online learning practices, it enacted people in particular ways: the efficient learner, the critical consumer of information, the self-disciplining worker, and/or the protected-surveilled citizen.

Such multiple enactments have implications for online learning practices. Lee attempted to delete all traces of his online activities. But what happens when a person deletes their contributions to an online forum? The pedagogic value of that conversation is likely reduced when these postings disappear. Hemetsberger and Reinhardt (2006) found that it is often the line of argument and the evolution of ideas which provides the most valuable insights in an online forum, and not the end point conclusions. In this instance, the delete button adds to the incoherence of online learning practices by erasing parts of the conversation, resulting in fragmentation of ideas and knowledge.

Or consider how one's digital footprint becomes translated into an e-Portfolio of sorts. In the learning field, e-Portfolios are created purposefully by learners to showcase their knowledge and learning journey. But digital footprints are more challenging to shape and thus end up as a mishmash of online artefacts and thoughts from yesterday and 10 years ago. Depending on your online activities, your learning can be very public and the past can be hard to leave behind. This will not bother some people. But as the web is often a confluence of work, learning, and play spaces (despite efforts to create boundaries) it can be problematic for some. Mayer-Schönberger

(2009, 11) argues that a 'comprehensive digital memory represents an even more pernicious version of the digital panopticon', resulting in self-censorship and a degree of public confrontation with one's past that may constrain learning. Participants in this study engaged with their delete button in different ways in attempts to negotiate their way around the digital panopticon. Mia, for example, actively obfuscated her online learning activities.

If information saturation was not so omnipresent, the need for a delete button would be far less pressing. If there was no need to remove, destroy, or hide online artefacts there would be no need for a delete button. Evoked by a rather innocuous button on a keyboard, deleting seems to be an integral part of online learning: as both a mundane and exotic practice. Although disarmingly straightforward at first glance, by unravelling some of the complex human-object assemblages associated with deleting, opportunities for interruption and innovation in online learning practices emerge. Latour (2005) cautions that all too quickly matters of concern become solidified into matters of fact: backgrounded, black boxed, and locked down. Keeping 'matters of concern' open is necessary in order for educators and citizens to critically interrupt premature solidification of online pedagogical practices. In the spirit of keeping 'matters of concern' open, the next section looks at the effect of the delete button actor-network on online learning practices by raising questions about liveable assemblages and new digital fluencies.

Liveable Assemblages

This study highlights how the delete button is a valued, and integral, assemblage in online learning practices. Fenwick and Edwards (2010, 9) advocate attending to the energies 'things of particular significance and apparent force' provoke in different spaces. As workers venturing online for learning purposes, Mia, Lee, and Dorothy became entangled with their delete button in order to manage the digital footprint they generated through their online activities. Such deleting practices are becoming more sophisticated and complex. Consider the surge of interest in online services, such as *WebSuicide*, which promise to delete all your information—profiles, friends, and messages— from social networking sites. Or *Vanish*, a prototype created at the University of Washington, designed to self-destruct digital data on its 'expiry date' in efforts to protect data privacy (Geambasu et al. 2009). Another online service, *reputation.com*, offers a suite of products (for a fee) to alert you to all content that exists online about you, monitor and remove your personal information, and even shape your online reputation. Provoked by the need for deleting, energies are directed towards data privacy, online identity management, persistence of digitalia, and a need for active management of online presence. As one goes about their online learning activities, it seems delete button assemblages may need to enlist more persuasive actors.

The data also highlights how the delete button actor-network is both mobilized by, and becomes an effect of, information overload. There are countless learning opportunities and a profusion of learning materials only a few clicks away. The tsunami of information, contacts, and postings on screens everywhere mobilizes the need for a delete button. What happens when there is so much information that it intimidates rather than informs? Certainly, one implication of information overload is, as Levy (2007, 236) explains: 'increasing amounts of time are spent gaining access to and managing information sources, and correspondingly less time is spent absorbing and reflecting'. To deal with information overload, the delete button assemblages in this study were translated into erasers and valves, shaping interactions with information and thus, learning possibilities.

Debate around ownership of web data, privacy and security, and the profusion of online information reverberates in this study. And yet, it is timely to ask how the politics of the delete button change as more actors become enrolled to assess, sort, profile, store, mine, and filter information. Or more complex state-of-the-art delete button partnerships become necessary to manage one's online presence. To Latour (2005), an important—and political—question is whether assemblages, once assembled, are actually liveable. Given how online learning practices are criss-crossed with attempts to manage information overload, I will explore the liveability of delete button assemblages within this framing.

Although technology can be both a contributor to, and tool which mitigates, the problem (Schultze and Vandenbosch 1998), Himma (2007) questions whether information overload can be solved by a technology solution. Perhaps a kind of spatial re-ordering of other objects and alliances is needed to create a refuge from excessive information. Levy (2007, 234) writes:

> [Given] today's experience of overload and acceleration, the answer would not be to prevent the proliferation of information or to slow down the pace of life across the board …our aim would rather be to cultivate unhurried activities and quiet places … practices that encourage *alternative* [emphasis added] habits and patterns of information production and consumption.

Levy (2007) is urging the cultivation of more contemplative practice and spaces for less frenzied activity. This is one possible re-ordering of the delete button assemblage that could impact online learning practices. Another possibility is offered by Mayer-Schönberger (2009) who advocates reintroducing our capacity to forget; a practice that has become more difficult with digitization. His more "liveable assemblage" is the *non*-persistence of information and an appreciation that information should have a lifespan.

Such ideas reflect a re-assembly of practices. Law (2009b) contends that practices are assemblages of relations that do realities and since realities are done in particular ways, the implication—the ontological politics—is that they could have been assembled differently. For Mol (1999, 75), ontological politics raises the hope that "the conditions of possibility are not given". We seem to be in a paradoxical relationship with information. Lincoln (2011) observes that despite the dramatic increase in the amount of accessible information, there are complaints that there is not enough useful information and pressure to obtain even more information. Different assemblages of information and technology, ones (to use Latour's 2005 words, 40) that move from mere juxtaposition to a more intertwined form of (liveable) cohabitation, enact a different reality for learning online. In new configurations, some actors disappear, new ones appear, and novel alliances emerge. Exploring alternative ways of producing and using information and considering radical notions such as the non-persistence of digitalia are possible starting points for adult educators and worker-learners to interrupt or assemble learning practices differently—including deleting.

Assembling Networks

Gherardi (2009) writes that performing a practice requires knowing how to align humans and artefacts within a sociotechnical ensemble. In this study it was not just content that was being assessed and possibly deleted but also connections to specific people, technologies, and entire assemblages or practices, which suggests a more sophisticated critical digital fluency. As a

stable object the delete button is familiar and part of the mundane, although not entirely straightforward. But as a fluid, or even fire object, the complexity of its alliances and circulations become more evident. It is not as familiar. Deleting practices are becoming more complex as the deletebutton-learner engages with issues around privacy, online identity, data security and ownership, insidious surveillance and sophisticated analytics, intellectual property protection, and rampant and often subversive commercialization activities online. Building the digital fluency to deal with all of this is a significant challenge.

Despite Dorothy's discomfort over some of her online encounters, learning about digital footprints and online security was a necessary passage for her continued online learning activities. How do adult educators help adult learners create more robust delete button assemblages that will enhance online pedagogy and prepare people for the increasingly public nature of online presence? The Media Awareness Network (2010, 5) offers a digital literacy model that includes critically understanding digital media. In this component of the model, the focus is on the 'ability to comprehend, contextualize, and critically evaluate digital media' which will enable people to 'reap the benefits—and mitigate the risks—of full participation in the digital society'. However, the model does not provide extensive details of what these skills might encompass and I anticipate many are complex. This study illustrated that delete button assemblages enacted roles as erasers, valves, screens, and shredders; each of these is a different pattern of relations and therefore, demand different digital fluencies, which seem to be in continual flux and evolution.

Exploring a pervasive everyday practice, such as deleting, affords glimpses into the sociomaterial entanglements energizing enactments of online pedagogy and knowledge production. The delete button mediates relations with what presses in on screens as well as digital traces left in cyberspace. Constantly negotiating absence and presence, the delete button assemblage mobilizes both digital inclusion and exclusion. Deleting is only one digital practice among many online learning practices and as this paper has illustrated, it is not innocuous. Emphasizing more critical understandings of the co-constitutive and performative relationship between people and web technologies, and how these relations both smooth and complicate work-learning practices online, enables adult educators to keep 'matters of concern' open. Questioning whether new human-technology (and other object) assemblages are liveable and identifying new digital fluencies in efforts to enable worker-learners to engage in workable networks is part of the messy work of interruption.

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