Proceedings of the 2nd International Conference on the Use of iPads in Higher Education

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Edited by

Benjamin F. Baab, John Bansavich,
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EDITORS' INTRODUCTION

In 2011, the Art + Design: elearning lab (http://elearningartdesign.org) started investigating the use of iPads in art and design education. At that stage it became obvious that academic research in this area was minimal and from this emerged the need to organize the 1st biennial international conference on the use of iPads in Higher Education (ihe2014). The first conference took place in Paphos (March 2014) and it attracted delegates from various countries and disciplines, thus confirming the need for a regular forum where academics and practitioners from different disciplines could exchange their experiences, research and best practice on the use of iPads in higher education.

The second International Conference on the Use of iPads in Higher Education, hosted at the University of San Francisco in San Francisco, California, featured 38 sessions over the course of three days, March 16-18, 2016. Sessions included insightful and inspiring keynote speaker presentations, formal reports of research and iPad implementation activities, exploratory working sessions, and skill-based, hands-on workshops. Attendees represented 28 US states and 11 countries across five continents in diverse roles such as researchers, faculty, administrators, IT specialists, and students from a wide variety of academic disciplines.

These Proceedings provide the in-depth, written versions of the research reports and iPad implementation experiences that were presented in 17 of the conference sessions. The following chapters are organized from an ever-widening perspective, beginning with personal accounts of iPad use by students and faculty, expanding to program and departmental experiences, and culminating with institution-wide iPad implementation and support activities.

The editors greatly appreciate all who worked to make the conference and these Proceedings a rich resource for sharing ideas, challenges, successes, and future plans, especially the conference steering committee, chapter authors, peer reviewers, and conference attendees.

CHAPTER ONE

A NOMADIC RESEARCH JOURNEY:
BLOGGING WITH AN IPAD AND TAKING
A CRITICAL POSTHUMANISM PERSPECTIVE[1]

VERONICA MITCHELL

Abstract

Most research about the iPad's role in education has investigated the instructional potential of the touchpad and the collective influence it has for shifting teaching and learning practices. This paper explains the more personal journey of an iPad-with-researcher travelling an unknown path through blogging at http://phd4veronica.blogspot.com/.

Each blog post begins with an image created on and with an iPad application (App) or combination of Apps. The forces and intensities of the iPad enable a diffractive approach that inspires thinking beyond traditional research reflexivity. The author illustrates how flows of

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energies between the iPad and herself open pathways that facilitate deeper engagement with theoretical concepts such as posthumanism (Braidotti, 2013) and new materialism (Barad, 2007). The process of image-making enabled by the touchpad technology leads to blog posts that explain her thinking and learning in the entanglement of theory, practice and data collection relating to practical realities now visible in a doctoral (PhD) research project. Connections are made and illustrated thereby enhancing a research initiative that is enriching teaching and learning in higher education.

Deleuze and Guattari's (1987) rhizomatic thinking illustrates the multidimensionality and openness that maps and promotes meaning-making in the context of this PhD research based in the Department of Obstetrics and Gynaecology at the University of Cape Town. This study was triggered by students sharing their narratives about witnessing abuse, neglect, and disrespect (ANAD) in South Africa's over-stretched public health birthing facilities. The objective of the doctoral study is to develop a socially just pedagogy for undergraduate medical students, one which affords them the opportunity to respond to socially unjust practices within the health system. The iPad serves as a powerful enabling mechanism in this research endeavour.

Keywords: iPad, blogging, images, posthumanism, rhizome

Introduction

Since the release of the iPad by Apple in 2010 and the explosive acceptance by users of iPads, there has been a slow but emergent collection of research on the use of these touchpads in educational contexts. The majority of this work has been human-centred with investigation into how educators can promote the use of the iPad and its technology as an instructional tool in classrooms particularly within schools. A large Canadian study (Karsenti & Fievez, 2013) indicated the "breathtaking cognitive potential" of iPads (p. 1). The survey findings noted the scarcity of research despite the potential. In this study the use of iPads was limited by the teachers' appetite for risk and their comfort with the tablet, therefore they predominantly used it as a content resource in the manner of a textbook and for course tasks such as assignments. The portability of the tablet and the ability to access information were expressed as the greatest benefits. Where the touchpad has had a strong penetration in schools, it has enhanced collaboration and motivation for learning in a creative manner amongst other benefits (Karsenti & Fievez, 2013).

There is a small and emerging scholarship in universities worldwide that explores the educational potential of iPads (Souleles & Pillar, 2015). As with schools, the focus has centred on the collective use of the iPad for promoting teaching and learning. For instance, Sullivan (2013) reports on her use of iPads to foster writing skills, to encourage "fluency, creativity, and accessibility" with recognition of the iPad's universal design and its collaborative potential (p. 2). The Cyprus-based Art+Design elearning lab has taken the lead in organizing biannual conferences to promote collaborative scholarship on the use of iPads in education. Their research with educators at Falmouth University in the United Kingdom assessed the usability of iPads using Rieber and Welliver's (1995) instructional transformation model. This model explains the hierarchical levels of adoption and engagement with technology through five evaluative stages ranging from the lowest level of familiarisation through utilization, integration, reorientation to the highest level of evolution. (Souleles, Savva & Watters, 2015). A follow-up study on student perceptions of the instructional potential of the iPad in art and design teaching found a fragmented variety of uses that limited the assumed potential for the iPad (Souleles, Savva, Watters, Annesley & Bull, 2014).

A systematic review drawing on 20 selected research papers suggested that there is "hope beyond [the] hype" for iPads to transform educational practices (Nguyen, Barten & Nguyen, 2015, p. 199). There is recognition that the "current state of practice is still in [its] infancy and exploratory" with the scepticism of educators again noted as a limitation (Nguyen et al., p. 197). Integration of this technology into teaching, learning, and research appears to be the greatest challenge.

Siemens and Tittenberger (2009) point out that for educators to be effective in bringing technology into their teaching they ought to have a "spirit of experimentation, [w]illingness to engage learners in the creation of learning resources (co-creation of content), [w]illingness to 'let go' of control and content presentation approaches to teaching [and] [t]olerance of failure" (p. 15). These attributes differ from the usual required for traditional teaching especially in medical education where subject knowledge and class control are highly valued.

From a personal perspective, my experimentation with technology with undergraduate medical students, and shifts in my own teaching style to facilitate student-centred interactive classroom sessions led to my immersion in a doctoral research project. In this research, blogging has become an integral and dynamic force and valued component of the process. Through and with the iPad, in multimodal ways, I am integrating my own learning

of theoretical concepts with classroom practices and data collection. This paper describes my own nomadic journey through blogging.

Theoretical Insights

A focus and starting point for each blog is the creation of an image on and with the iPad. These images mediated by my iPad form a dominant part of my research journey through unknown territory, a travelling path in which I explore my own learning in the creation of blog posts. According to Sapochnik (2013) image-making as part of the process in a research project is unusual and limited.

The relational ontology of my being and becoming-researcher involves "nomadic thinking" explained by Rosi Braidotti (2006) as a "nomadic subjectivity in transposition" that constitutes the possibility of weaving together different strands and indicates (as in music) "variations and shifts of scale in discontinuous but harmonious patterns" (p. 5). This posthuman philosophy decentres the human subject in an affirmative manner and moves away from the binary of the subject as me and the object as my iPad. In this mutual exploration I recognize my "nomadic body, a threshold of transformations … a surface of intensities and an affective field in interaction with others" (Braidotti in interview with Dolphijn & van der Tuin, 2012, p. 34).

Working through posthumanism, Karen Barad's (2007) new materialism enables me to interrogate the complex relationships that give agency to time, matter, and space. Furthermore, Gilles Deleuze and Felix Guattari's (1987) rhizomatic thinking provides a useful metaphor to describe the potential of the assemblage formed by the iPad and myself. This assemblage is the network created between myself, the human, and the iPad, as the non-human, both connected and related through "the mutual constitution of entangled agencies", an entanglement that Barad (2007) calls an intra-action rather than an interaction (p. 33).

The tablet makes available an open and smooth landscape for my explorations in which these different theoretical concepts can be threaded through each other. The iPad's affordances, described as "the action potential of a technology" (Siemens & Tittenberger 2009) enable me to explore my learning (p. 21).

In this paper I will explain how images on the iPad created with different applications (Apps) have produced a force and intensity to open up my thoughts and ideas contributing to my regular blog posts published on Blogger which is hosted by Google. These blogs are self-generated

with the iPad; they both individually and collectively reflect my learning through the process of researching student learning in Obstetrics. The iPad has become an extension of myself through the interrelationships and intra-actions involved in designing images and writing the texts of these blogs.

Looking in on Obstetrics Learning

Through blogging I share my explorations as a doctoral candidate immersed in researching and developing a socially just pedagogy in medical education: a teaching strategy that seeks to engage with "troubled knowledge" to develop students who can be and become advocates for change (Jansen, 2009). Zembylas (2013) explains 'troubled knowledge' as "the knowledge of a traumatized past such as the profound feelings of loss, shame, resentment, or defeat that can be carried from participation in a traumatized community" (p. 177).

The fourth year curriculum in Obstetrics is the focus of my research project, a curricular space of extreme emotional tensions, a time when students are initiated into the practical aspects of birthing babies in the local public health facilities. It is a momentous slice of the curriculum in our six-year medical degree, sometimes considered as a rite of passage when students begin to feel like real doctors as they combine theory with practical experiences. However, our undergraduate medical students at the University of Cape Town (UCT), South Africa, are immersed in an overstretched health system exacerbated by the legacy of Apartheid, and where they frequently observe human rights violations that leave them feeling helpless, shamed, and disempowered (Vivian, Naidu, Keikelame & Irlam, 2011).

Local research in our Health Sciences Faculty at UCT describes how students witness "professional lapses", one of the many terms used to describe abuse, neglect, and disrespect (ANAD) among healthcare providers and clinical teachers at all levels of training (Vivian et al., 2011). Surprisingly, this tension is particularly prevalent in Obstetrics both locally in South Africa and globally (Honikman & Fawcus, 2015, Bohren, Vogel, Hunter, Lutsiv, Makh, Souza, et al. 2015, WHO Statement, 2014), yet these practices continue. Hence my interest in developing a teaching strategy that can foster an increased capacity with the new generation of doctors to challenge prevailing unacceptable practices that have become normalized.

As an educator in health and human rights at several levels in the medical undergraduate curriculum, I was drawn to researching students'

experiences in their Obstetrics learning. For as Semetsky (2010) points out these "real-life events are themselves those critical lessons from which we can and should learn" (p. 480). She expands on this notion in her later concept of an "ethics of integration" that uses these points of uncertainty, these critical incidents, to create revised understandings and meanings, "to become-other when we create in practice a new meaning for a particular experience" (Semetsky, 2012, p. 47). My shock and dismay as an outsider looking in (as a part-time educator who is not a medical doctor) triggered a "line of flight" into my present doctoral research project - an unexpected "deterritorialization" that took me away from simply facilitating workshop engagement (Deleuze & Guattari, 1987). These Deleuzian concepts will be explained further in the paper.

I began to take "notice of the differences and transformations that emerge in specific events" and to move away from a human-centred gaze known as the anthropocentric gaze towards an exploration of a more expansive understanding of the multiple forces shaping student learning (Hultman & Lenz Taguchi, 2010, p. 539). My doctoral research project (PhD) emerged as a consequence of listening to students' personal narratives both in the classroom and from online reflective commentaries. I started questioning what was influencing their struggles and the conflicting messages that were troubling them. I felt an urgency to find a pedagogical strategy that could best equip students to engage with issues of social injustice and ethically respond to them.

Ethics approval was obtained from the University of Cape Town where I work with the undergraduate medical students and from the University of the Western Cape where my research forms part of larger collaborative educational projects exploring critical posthumanism and the affective turn.

A Nomadic Blogging Journey

Through this on-going research project, I have created a blog to describe my personal learning experiences as an individual researcher in higher education. The blog posts provide a space for interpreting and mediating my understandings and journaling my learning journey through the PhD process. I am nomadically exploring my learning and thinking by mapping the landscape through creating images and writing related texts in these blog posts using Blogger at http://phd4veronica.blogspot.com/

The blog is self-generated with no prescriptive instructions from others. While there are many reasons why academics are engaging with blogging (Mewburn & Thomson, 2013), my motivation is driven by the

need to interrogate my emerging understandings and interpretations of the theoretical concepts related to my research and the associated data. The public space of the blog and social affordances through a wider readership and interaction with others online, is a consequential factor rather than a reason for its creation.

Blogging is an increasingly popular educational online tool that offers a number of technological and educational affordances (Bower, 2008). Deng and Yuen (2011) suggest that blogging acts as a vehicle for "self-expression, self-reflection, social interaction, and reflective dialogue" (p. 441). These factors encouraged me to use my iPad for blogging. Self-expression through image-making appears to facilitate and expand my thinking in a way that text was not able to do. The images enable me to move beyond reflection, which Barad (2007) suggests is about "mirroring and sameness" (p. 29). The image-making moves me to a more expansive diffractive reading of my learning in which differences and patterns can be illuminated. Barad (2007) draws on Donna Haraway's concept of diffractive thinking to explain the reality of diffraction in terms of waves that combine and disperse when they overlap and move across an obstacle thereby generating an interference/diffraction pattern. She stresses the value of working with difference rather than sameness.

Each blog post begins with an image that is constructed through drawing tools in single or multiple layers or with photos that are placed separately or together. Different combinations of components are used in constructing the art-making. This process of visual communication is later followed by text. There is an openness to new possibilities and influences. I explore different Apps in producing the images and find them through searching the Internet or from recommendations given to me by others in conversations or online social media. This differs to research and classroom practices where Apps are selected by educators and researchers for students to use (Souleles et al., 2014).

The image-creation appears to enable me to embrace the entanglement of materiality with myself, to discern the differences that matter. Rather than evaluating the end product of each image or analysing its visual representation, the drawings have agency of their own. Each forms an assemblage with me and the iPad, reflecting my thoughts, rather than being reduced to a passive reproduction (Barad, 2007). This is explained in Figures 1.1 and 1.2, which show examples of the visuals produced on my iPad with brief explanations.
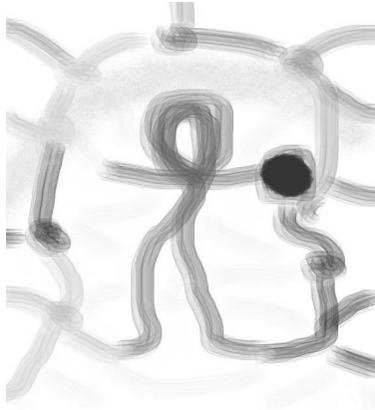
Figure 1.1 relates to the blog post titled "My iPad and Me". It was drawn using the Brushes App to explain how the iPad is an extension of my being and becoming, opening up new possibilities through my thinking with the materiality of the tablet, any time, any place. There appears to be a dual flow of affect and intensities through the fabrication of imagining mages (Deleuze & Guattari, 1987).

Figure 1.2 shows myself immersed in the research data, being caught in the folds through mutually constituting forces. I cropped selfie photos then inserted them into my drawing created on the Sketches App.

The meanings of my drawings/diagrams/images constitute a material-discursive practice which is open-ended and where "the material and the discursive are mutually implicated in the dynamics of intra-activity" (Barad, 2007, p. 152). I seek to understand the force, impact and entanglement on me as a researcher/teacher and what effect the curriculum

has on student learning. Below I provide three more examples of images I have produced, accompanied by brief explanations.
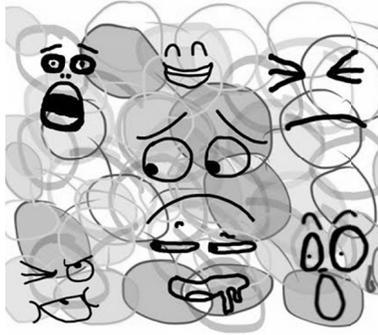
Figure 1.3 shows an image created in my blog titled, "Behind my blogging" which explains how the images and blogs have become self-generated data emerging through an iterative process - data-in-the-making, "enabling newness to come into existence; the 'more-than' of data" (Springgay & Zaliwska. 2015, p. 137). There is a sense of freedom and playfulness in creating my blog images. Here I have superimposed stamps of facial impressions from the Coolfaces App onto an earlier design created in the Adobe Ideas App. The roughly circular elements from a previous blog post titled, "Digging deeper into diagramming" were drawn to demonstrate the multiple lenses that illuminate the entanglements emerging from my research.
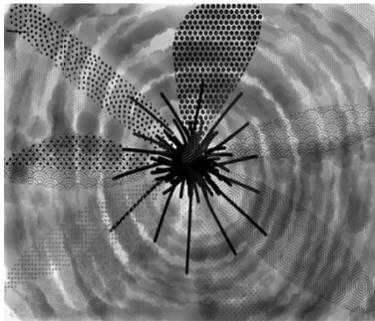
Figure 1.4 was drawn using the Sketches App in a blog post titled "Citing circles". I crack a peephole into my teaching experiences with students in their practical Obstetrics rotation. This is pulling me along lines (explained as "lines of flight" by Deleuze and Guattari (1987) that touch/feel/see and explore students' experiences that are often hidden away through silence. The darkness of this peephole is illuminated by the impact of sharing.
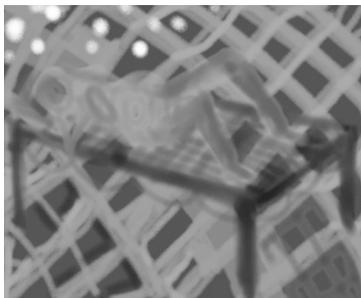
Figure 1.5 is the drawing in a blog post titled "Position mattering" created using the iPastels App. The image centres a bed that holds down a woman giving birth. It highlights the regulation and control that is evident in some birthing units. Our students recognize the disjuncture between learning about alternative options for birthing positions then witnessing a different approach in some of the maternal facilities where choice is not an option.

Beyond the physical smooth surface of the tablet there is a deeper smoothness where the potential energies move outside the tools and competencies that I possess. This openness to new possibilities and influences where creativity can enhance the process, is described as a smooth space by Deleuze and Guattari (1987). It differs from the usual scientific research which tends to prioritize the transmission of information and facts led by evidence which is measurable with impact outcomes, known as a striated approach indicating tight control and classification (Deleuze & Guattari, 1987).

The iPad expands and multiplies my ability as I connect with it to the wide range of tools and a/effects available to me in the different Apps. Without any design or artistic training, I can experiment in the creation of images or collages. Furthermore, the mobility affordance of the iPad allows me to spontaneously create the images in different places and times such as on the bus, in coffee shops or other informal settings.

Thinking through images with my iPad contributes an important component to my research project by providing a different way of knowing, and interpreting those ways differently. The drawings help me to explore my insights from and about the multiple actors involved in student learning in Obstetrics. The iPad images can accommodate issues around relationships such as affect, defined as "our power to affect the world around us and our power to be affected by it, along with the relationship between these two powers" (Hardt in Clough, 2007, p. ix). The assemblage of the iPad and me has an empowering force; it opens up new

channels of flow in the Body without Organs (BwO) - in my body/the body of the iPad (Deleuze & Guattari, 1987, pp. 22-23). Lenz Taguchi and Palmer (2014, p. 764) explain BwO as "a body as a plane or place, which is passed by and intertwined with material, semiotic, and social forces of various speeds and which is becoming more or less 'full' or 'emptied' on a continuum". My subjectivity gets extended by association with the many interconnections and intra-actions that emerge in the teaching machine (Deleuze & Guattari, 1987).

The iPad and Me

Braidotti (2013, p. 43) asserts that posthumanism does not assume an individualised, human self but "a transversal inter-connection or an 'assemblage' of human and non-human actors". This assemblage began in November 2014 when my iPad and I produced weekly artefacts as blogs. Through the medium of blogging I progressively question my own position, my becoming in the production of this research project. In this process of entanglement where images and ideas twist themselves as they relate to each other through my linguistic and artistic efforts, the assemblage is becoming in unexpected ways that are fluid and dynamic. As indicated in Figure 1.1, the iPad is part of me, an extension of my being - a consequence of my visual impairment (a congenital condition) yet a ramification and amplification of my creative flows. There is an interdependence between myself and the device - an example of the posthuman that recognizes the decentering of the human (Carey, 2010).

The drawings act as the initial force, opening up flows of energy as I question my theoretical understandings of what we do in the Obstetrics curriculum and how we do it. By creating agential cuts through the images there appears to be a "rhizomatic zigzagging flow" where ideas "link, connect or collide with another, and produce something new or different" (Lenz Taguchi & Palmer, 2013, p. 675). According to Braidotti (2013) "[t]hinking is the conceptual counterpart of the ability to enter modes of relation, to affect and be affected, sustaining qualitative shifts and creative tensions accordingly, which is also the prerogative of art", as elucidated in my own work (p. 170).

These art creations have contributed to a collection that forms part of my becoming-researcher through an iterative process of multiplication connected to my thinking, Forces and movements entangle to produce assemblages between the iPad and myself. The relations and connection between the tablet and myself construct an in-between space through the "mingling of bodies, the meeting of forces, a constant interpenetration and

interconnection of all phenomena" (O'Sullivan, 2006, in Clark, 2012, p. 209).

   The wide range of applications available for images and the affordances of the Internet to access them provide me with a smooth space for exploring my becoming. The iPad offers a surface with little resistance allowing a free flow for my finger, a preference to the presently available stylus or pen options. Original ideas are supported and mangled (Pickering, 1995) by using photos, icons, images made by myself and others that can be combined to provide multiple meanings. I can choose to expand my drawings horizontally spreading out across the tablet face or vertically adding more layers with tools such as Adobe Ideas. The movement is variable. Even magnification on specific areas is possible through different hand movements. The choice of tools and colours gives me more opportunities for exploration—it feels like an immersion into a virtual art studio. Unlike a piece of paper, it is expansive. I am not an artist and have no design expertise, yet I can submerse myself in the free flow of activities like mixing colours, using erasers for varying effects, and choosing a vast array of drawing tools and photo effects. I can plug into ideas as my thoughts move to graft them onto each other (Bergson in interview with Dolphijn & van der Tuin, 2012). This leads to combinations like sketching on photos. I can make agential cuts where and when I choose (Barad, 2007). The texts created (both visual and verbal) then become marks on the iPad/my body that continue to record the progress of my research.

   Reflecting on my research journey since acceptance of my doctoral proposal, these blogs have opened up an expansiveness to explore my thoughts and my intra-actions (Barad, 2007). Through readings and conversations with others, new lines of flight have moved me with their force and flows resulting in established beliefs being disrupted and ruptured (Deleuze & Guattari, 1987).

The Entwined Entanglements and Rhizomes

   '[W]e do not stand outside of the world, we are instead part of the world
   in its ongoing intra-activity' (Barad, 2007, p.146).

The materiality of images and the iPad have become forces to elucidate the reality of my research on ANAD in Obstetrics. It is through the interrelationships "where things and matter, usually perceived of as passive and immutable, are instead granted agency in their intra-activities" (Hultman & Lenz Taguchi, 2010, p. 539).

While the "grammar of images" (Kress & Van Leeuwen, 1996) and social semiotics of visual communication are frequently used to describe images through representations, interpersonal connections, and compositional elements, my choice is a move away from the anthropocentric gaze (p. 1996). This move away from centring and prioritizing the human gaze gives recognition to the co-constitutive relations that are mutually intelligible between the material and human. There is an entanglement of connections into which I immerse myself when plugging into the theories and my research data through new materialsim (Jackson & Mazzei, 2012). I seek to diffractively engage through/with difference which tends to be non-linear and non-hierarchical.

Dolphijn and van der Tuin (2012) assert that we need to begin by "mapping difference in itself" (p. 128). Illustrative of this type of mapping is the metaphor of the rhizome—something without a beginning or end. It is anti-genealogical, with a multiplicity of connections and dimensions, not constrained through bureaucracy or hierarchical organization rather a process that "acts on desire by external productive outgrowths" (Deleuze & Guattari, 1987, p. 14). Figure 1.6 illustrates my rhizo-thinking through a collection of several of my images. While the blog posts are published and viewable in a linear time-determined pattern, the images/text/ideas are related to each other in a multitude of ways.

Figure 1.6. Illustration of rhizo-thinking as inter-connected, iPad-produced images.

What follows is an explanation of Deleuze and Guattari's (1987) rhizomatic thinking to illustrate how a fluid, generative and multidimensional research component is making a mark. As each image is created, an agential cut is made through which certain aspects of my research are highlighted and others excluded (Barad, 2007). With and through images, I diffractively open spaces that can elicit and affirm affective responses.

Deleuze and Guattari (1987) claim that traditional educational practices inculcate an arborescent culture. The vertical, fixed, and linear thinking can be compared to a tree with roots. There is a clear and defined structure representative of the species. Rhizomes on the other hand, are productive and generative and symbolic of post-qualitative research that is dynamic, fluid, indefinite, unfolding (Greene, 2013, p.753). According to Taylor (2008) drawings provide a "trace of the thinking process" through marks that reveal emotions, force, and other characteristics depending on the medium and tools used. As the researcher, I am creating and recreating agential cuts (Barad, 2007). In terms of rhizomatic thinking, the images drawn offer new potentialities that are creative and unimaginable; therefore, mapping becomes a more appropriate term to use than tracing (Deleuze & Guattari, 1987).

Deleuze and Guattari's (1987) rhizomatic framework provides a valuable tool for thinking with my iPad. The tablet extends and connects me to new ways of being. It fosters a rhizomatic exploration using the six principles associated with rhizomes, described in Table 1.1 below.

Table 1.1: *Explanation of Rhizomatic Principles*

Rhizomatic principle	Brief description	Demonstrated in the iPad blog posts
1. Connection	There are no fixed beginnings or endings rather opportunities for splitting off knowledge at nodes and ruptures as new knowledge is created through entangled becomings.	As indicated in Figure 1.6, the images on the blog posts connect with each other in a non-linear manner.
2. Heterogenity	Barad (2007) points to the importance of seeking out patterns of difference that make a difference.	Rather than using the uniformity of text, through the iPad I work in a diffractive way using different resources enabling the images and texts to thread through my thoughts. The different mediums of pastels, paints, crayons and pens plus fillers and special effects shift me and facilitate the transformed expressions made visible by the available Apps.
3. Multiplicity	The generative nature of the rhizome offers multiple potentialities.	The iPad shifts me into unknown spaces as I explore new and different Apps sometimes found through general searching or online resources such as Educational Technology and Mobile Learning.
4. A signifying rupture	Rhizomes can be broken at any point creating "lines of segmentarity" (Deleuze & Guattari, 1987).	Through the art-making on the iPad new ideas emerge.

5. Cartography	Maps have multiple entryways and orientations, like rhizomes. Braidotti (2013) explains a cartography as "a theoretically based and politically informed reading of the present" (p. 164). It is a map of emergence that "constitutes a production of spaces in between the different fields of logic" (Lenz Taguchi & Palmer 2014, p. 275).	By pushing through my inexperience in design and artwork, my image creations generate visual maps. These open connections take me in/through many dimensions and directions as well as providing a medium that is "detachable, reversible, [and] susceptible to constant modification" (Deleuze & Gauttari, 1987, p.12). The collection of images created since the start of my PhD study will provide a mapping of my progress.
6. Decalcomonia	According to Bonta and Protevi (2004) decalcomonia is the "mimetic process of lifting a code, image or text from one medium, then transferring it to another without transforming it" (p. 75). It refers to the transfer of information and patterns.	The touchpad facilitates an emergence of the unconscious with the transfer of patterns through my thoughts into the image-making — a dynamic intra-activity.

These principles described above are evident in varying degrees in the image-making-becoming of my research project. The iPad creates spaces through which the agential force of the materiality of diagramming or image-making is elicited and enacted. The mapping of thoughts through tools on the iPad reveals an unconscious knowing as it opens up the flows and connections described in rhizomatic thinking. Barad (in interview with Dolphijn & van der Tuin, 2012) states that "knowing is a direct material engagement, a cutting together-apart, where cuts do violence but also open up and rework the agential conditions of possibility" (p. 52). Through the process of drawing there appears to be a rupturing of restraint and perhaps self-censorship to elicit something new. An entanglement is occurring creating an assemblage that enables and allows the different flows of knowledge as opposed to a binary constriction where the drawer and the drawing remain as the subject and the object.

Challenges

Finally, I will consider the challenges in using the iPad for mediating the blogging activities before concluding. Finding the time to connect with the tablet for blogging has been my greatest limitation. The regularity of blog posts is challenging to maintain. This flow was interrupted through times away from my usual routine or when heavy work commitments demanded different priorities.

Another limitation was my sensitivity to the public online space. On several occasions the artefact produced through the intra-action of the iPad and myself was left in draft form but never published. The free-flowing intensities creating the artefacts sometimes felt unsuitable for sharing online. Although this reduced the output number, I was and continue to be continually conscious of the sensitivity of the topic that my research is addressing.

Conclusion

This paper has drawn on theoretical concepts of critical posthumanism to explain the entangled intra-actions between my iPad and myself, depicting the broader practice and relationships between technology and humans. Through my personal narrative of blogging in becoming-researcher, and the rejection of the duality of humans and technology, I have explained the value of using the affordances of the iPad to expand our reflectivity to highlight differences that make a difference through a diffractive approach.

The blog posts enhance my rhizomatic thinking as there is an unfolding of my subjectivity as a researcher. Through a diffractive approach to image creation, I have been able to explore the layers of meanings that emerge from a learning space that tends to remain silent and secretive in students' learning of Obstetrics. By capturing multiplicities through Deleuze and Guattari's (1987) concept of rhizomatic thinking that engages with Barad's (2007) material-discursive practises deeper insights have been gained.

Images enabled through touchpad technology create a powerful medium to enhance research, teaching and learning in higher education. While sometimes viewed as a childlike activity, this undervaluing of the force of the medium is demonstrated as inappropriate. Rather, drawings that are spontaneous and immediate have a force and intensity that can promote the research process. I have shown that a collection of drawings emerging through an iterative process - data-in-the-making, creates a process of "enabling newness to come into existence; the 'more-than' of

data" (Springgay & Zaliwska. 2015, p. 137). The images in the blogs created through the numerous iPad Apps complement traditional research methods by opening up spaces that can generate forces and knowledge that move beyond conventional self-reflection.

The iPad as a technological device is rupturing me in unexpected nodes, facilitating new lines of flight that deterritorialize the assumed role of instructional support generally associated with a tablet. As I explore my learning through the doctoral research process, the iPad forms an integral, embedded, and embodied part of my becoming and my research subjectivity—the value of posthumanism.

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