WHERE IS THE TEACHER IN ONLINE LEARNING: CENTRE STAGE OR CAMEO APPEARANCE?

Julie Peschke, Athabasca University, Canada

At the conclusion of my first experience as a teacher in the cyberspace of no-bodies, I couldn't even prove that I had been there. I had no mementoes of the times my students and I had spent together over that prolonged seven-month period in the early part of 2010. I had no photographs of the group, no hard-copy textbook as a reference, no physical place to which to return for an encore. I had only memories. The recordings on file could, just as easily, have been taped in a studio … and yet, it had not been an ethereal dream. Despite our mutual invisibility, one to the other, our presences had not gone unfelt. They had had their own reality – a virtual reality if you like – which had been transforming for all who had been there. The affect had been internalized into our psyches, both conscious and unconscious, and the legacy would, no doubt, impact our lives for many years to come.

Today I realize just how profound an impression that excursion into the virtual world of e-learning had had on me, as a teacher of mathematics, and as a person. It had altered my views of others' learning; it had changed my tenets of good pedagogy; and it had cut through some of my fore-conclusions about the use of technology in education.

The Online Educator

So to where had I 'beamed' in this vast expanse of outer space which was not unlike some of the alien worlds of science fiction literature? Had I made my presence palpable? What roles had I played with those some twenty or so adult participants, all volunteers and all wanting to improve their mathematics skills in order to further their respective careers? Yes, I had been the architect, the creator. Yes, I had been the prime mover to get the project off the ground, so-to-speak. Without me, that encounter would never have taken place. However, in this new age classroom, I had not been able to command silence, participation, or even attentiveness. It was an environment devoid of confines and social norms. I had understood, however, that my active participation in this drama could not be *demanded* or even expected. It would necessarily be *granted*. I had wondered how large or small a part I could actually play in their learning. At the outset of my research endeavour, these had been the great unknowns and I had had no preconceptions as to the answers.

The roles of online educators, formal or informal, can be as diverse as those of a teacher in a face-to-face classroom. I have always thought of teaching as a bit of theatre with interloping

vignettes of '*Whose line is it anyway?*' in which a part of the pedagogical imperative was, at least, to command attention and engage in dialogue, if not to entertain. This can be difficult to achieve in a subject like mathematics but I was, more or less, convinced that it could be done – with enough effort, energy and innovation. Therefore, if we conceive of teaching as a kind of staged production with improvisational interludes, either live or on screen, then teachers in online settings can choose to take on any number of tasks, including:

- script-writers (authors of e-texts, software applications or static web site content),
- set designers and stage managers (responsible for web site design, navigation and construction),
- directors (those who take an active instructor's / facilitator's role in synchronous web conferencing or asynchronous web discussion forums),
- star performers (primary educators featured in a video series of taped lectures or interactive tutorials),
- actor understudies (those who explicate another's e-text), and
- veteran experts who make cameo appearances for credibility, credit and impact – either in person or in iconographic imprint, even as Alfred Hitchcock had done in his television series.

No doubt, from earliest times, teachers have experimented with varying combinations of these roles to greater or lesser extent – often changing paradigms from one generation to another. At the beginning of the twenty-first century, we educators in this now 'global village' are facing another paradigm shift in how we *communicate* our collective understandings one to another. John Dewey (1916, p.12) had defined the educational process as follows:

> *This education consists primarily in transmission through communication. Communication is a process of sharing experience till it becomes a common possession.*

 What had been envisioned at that time as an in-person conversation between two or more open minded and curious individuals had now become exchanges over a wireless network in the form of packeted sequences of 0's and 1's between a group of participants residing in geographically–disparate locations around the planet.

It was in the context of this philosophical backdrop that I had begun, from 2008 onward, to think of extending my face-to-face teaching experience in mathematics into an online environment in which texts, dialogue and pedagogy were created and accomplished using the multimedia technologies then available. The primary question had been: Where would I position myself in this vast, fluid, auto-morphing space? I decided that the virtual stage was to be of my own making; I would be the script-writer, the set designer and the stage manager. It turned out that, at the outset of the online encounter, I was both director and star performer. However, as the participants' understanding of the mathematics deepened, I gradually relinquished that centre stage and the students emerged as the star performers and assistant directors of that production. Nonetheless, in the kaleidoscope of hats I had donned during the enactment of that scripted venture, the critical role which led, at least according to my

volunteer participants, to its pedagogical success had been my enduring presence, both asynchronously and synchronously, through its pages.

The journey had begun with an extensive, cross-disciplinary literature review of areas as diverse as adults learning mathematics, motivating factors for self-directed learners, the role of cognitive psychology in hypermedia environments, visuospatial considerations of web design and navigation, and case studies of other such experiments around the world on five continents of the globe.

Moving into the Pedagogy of No-bodies

Already more than half a century ago, Marshall McLuhan (1962, pp.52-53), Canadian educator, philosopher and scholar, had daringly declared:

> *The next medium, whatever it is—it may be the extension of consciousness— will include television as its content, not as its environment, and will transform television into an art form. A computer as a research and communication instrument could enhance retrieval, obsolesce mass library organization, retrieve the individual's encyclopedic function and flip into a private line to speedily tailored data of a saleable kind.*

In my opinion, one is remiss to explore the phenomenon of online learning without some reference to Marshall McLuhan. His scholarly writings on communication media theory were prophetic and probing, particularly provocative and tantalizingly perplexing. His enigmatic aphorism, 'The medium is the message' (McLuhan, 1964, p.203), and his prediction of the World Wide Web (see the above quotation), almost twenty years before it was even invented, both compel us to examine his work concerning the influence of communication media – particularly as it relates to the effects of online pedagogy on both instructor and student in this digital age. Therefore, as I read his proclamation, I pondered the words carefully – 'the extension of consciousness' – and wondered what that would mean.

McLuhan (1962, 1964), in his work on the virtual properties of communication media, had already put forward his notion of a '*mosaic of language*' to impart the deeper meanings of a text. I became convinced that these ideas, if played out in the realm of mathematical thought, had the potential to lead to a multi-dimensional understanding of the ideas which had led to our current understanding of the natural processes of the universe. Lamberti (2011) had also interpreted McLuhan's mosaic as a tool to enhance our knowledge and our apprehension of writings and texts through the "interplay of ancient wisdom and cognitive stimulation" (Lamberti, 2011, p.xxxv). Further, she suggested that McLuhan's mosaic was "born out of the meeting of orality and literacy" (p.xxxv) and played out by the juxtaposition and the connection of differences. In my understanding of it, this kind of mosaic was a path for a scholar to take towards what Gadamer (1989) had described as a "fusion of horizons" (p.245) whereby a scholar, when interpreting a text, finds a way to articulate the text's history and meaning within his/her own background of understanding. In fact, McLuhan himself had

said: "**new media do not replace each other, they complicate each other**" (as cited by Lamberti, 2011, p.xli). Certainly, modern mathematics had been founded upon a broad base of historical sources dating back millenia and subsequently layered with the enlightenments of the generations to follow. With this in mind, I decided to interlace historical perspectives into the online manuscript of this project, including my own personal understandings, both mathematical and pedagogical. This was not going to be a 'new' approach to pedagogy. It was going to be a melding of past and present, a blend of text and voice, an unpacking of the language of explication through modern multimedia technologies – all intended, not only to elucidate but to encourage cognitive stimulation into innovative ways of viewing the age-old insights of past and present generations.

Role as Script-Writer

When I began my investigation into the creation of a fully online mathematics program, the prevailing pedagogical issues of such initiatives, in my opinion, had had to do with their form (the **how** of presentation) and their content (the **what** to include). In the ensuing years, the path to that end turned out to be long and circuitous, crossing a number of disciplinary divides but always circling back to the steady state of what had been successful in my past face-to-face encounters. It ultimately culminated in a multi-layered, blended model of both asynchronous and synchronous e-learning paradigms and a research study of student responses and learning experiences within it.

The Osmosis of the Subjective and the Objective: Personalizing Your Script

In any educational endeavour, the subject matter and its messages to and through both instructor, as script-writer, and student, as participating reader or observer, permeate any learning environment with an ether of nuances. For example, how a teacher perceives the subject content will be tacitly communicated to her/his students in both overt and covert ways. My view of mathematics as a whole body of knowledge - a language, an art form and a philosophy of thinking – had always moulded and modified my teaching of its concepts. My personal perspectives of this academic discipline explicated, to some degree, my pedagogical approaches to the learning of its rigours and enigmas.

As abstract a subject as mathematics is generally perceived, I saw it as having many human faces. In my mind, it was a language with alphabet, grammar and composition whose vocabulary and syntax had to be learned over time in the same way that our natural languages are learned, from simple grammatical constructions to complex paragraphs of thought. I recognized its power as a coded form which scientists use to encapsulate the workings of our universe into relatively simple constructs called equations. In fact, rather than just a terse symbolic code to be accessed by only the initiated, I had begun to conceive of mathematical writings as poetic expressions, in the truest sense of the word. John Hollander (1961, p.7), in his book *The Untuning of the Sky,* had talked about poetry:

> *If a poem is to be treated as a highly complex utterance in a spoken language,*
> *its written form becomes a simple coding of it, word by word, onto a page.*

These aspects of mathematics as a descriptive language, a way of modelling our personal or collective activities, and a poetic utterance enabling us to understand the natural world around us encouraged me to believe that teaching mathematics online was indeed possible – even desirable. The duality of teaching and learning mathematical ideas can be seen as a kind of communication coming to a mutual understanding about an external object or process. Such communication, though sometimes through demonstration, is primarily through language, either spoken or written, or through art form (diagram or chart or video). Therefore, even though my students and I would be adrift in no-body's land, all of us still had our *virtual faces of language* to communicate the abstract ideas born of the personalized sensorial responses embedded in our inner selves.

Role as Set Designer and Stage Manager

Burbules (2006), some ninety years after Dewey (1916), addressed the notion of communication in a faceless world. He viewed an online environment as being a potential *space of collaboration* for those who engaged with it: "The fact that they inhabit a shared space is essential for this collaboration to work" (Burbules, 2006, p.44). Burbules's concept of '*immersion*' (2006, p.40), through interest, involvement, imagination and interaction in and within such an environment, exhibited common threads with Dewey's process of sharing experience until it becomes a common possession. The online instructor, therefore, needs a *place of collaboration*, either self-constructed or ensconced within a pre-fabricated framework of course or learning managements systems.

I had chosen to build my own virtual classroom. It was a web site having an omnipresent drop-down navigational menu over an underlying graphical network of links laid out as a lattice with many avenues of entry and exit. Its contents consisted of a nested mosaic of media containing a hypermedia environment of my own audio-backed Flash tutorials, external videos and web sites of interest, historical notes, applications in science and other math-related disciplines, auto-marked exercises of practice, and an online discussion forum (See Peschke, 2008). As a virtual entity, I had hoped that it would become a stage on which mathematics could be showcased as a cross-cultural human endeavour and achievement. This web site became the back stage of personalized rehearsal and practice for both me and my research project participants. It was my unrehearsed script intended as an e-text for the students who came there to visit. Jeff Dutton, the IT expert who digitally set up the web site, and I were the stage designers and stage managers. Together, we answered all queries about the web site through 'Help' menu email links posted on the site itself.

Role as Director and Performer

A major issue, at the time, was: How can one share experiences if there is no togetherness of place? The web site was a place of individualized learning for pause and ponder with the

internal self but, as it turned out, not a platform of sharing and exchange despite the links to a discussion forum posted on the site. McLuhan had highlighted the issue another way: "**when you are on the phone or on the air you have no body**" (as cited by Lamberti, 2011, p.xxix). Both of these instances of technological communication take *place* in a kind of ethereal "zone of between," to call on a phrase of Ted Aoki's (2005, p.161). Even though persons involved exclusively in these kinds of media exchanges have no visual impact on each other, yet it is possible to develop, over a period of time with repeated interactions, a recognizable, personal identity or persona over both telephone and radio through one's voice, through certain behaviours (such as if one laughs a lot or meanders in thought pattern) and through the medium of language expressed through that voice. Consider the experience of attending teleconference meetings or web conferences. Such technologies have simply altered the ratios of the senses from a mix of all five of the major senses, as in face-to-face situations, truncated to at most three of them, further trammelled by the hardware of the machines or devices being used. When you are communicating over the Internet (even with web cams), you also have no body which is tangible to the others. In particular, without web cams, you are truly **faceless**; you have been reduced to the greyed-in head and torso icon of certain email clients. Therefore I began to ask: What kind of personal identity and impact, if any, can anyone, in particular the instructor, have in such environments? How can 'no- body' become 'somebody' in a physical vacuum?

The solution was the inclusion of weekly synchronous web-conferenced tutorials. This virtual environment of imagery (white boards, markers, software applications, and text-based chat boxes) and sound (microphones and speakers) became our 'live' front stage on which the scripted parts and the extemporaneous interchanges would be played out. At the beginning of the project, I was the star performer and the director of action. Most of the participants came regularly and depended on my scripted e-texts, my explanations, my provocative leading questions and the provided homework as an impetus for their learning.

Metamorphosis into an Understudy

As the participants who came regularly became more and more confident of their abilities and secure in their knowledge of the subject matter, I slowly allowed those who were eager and willing to occupy centre stage for a spot performance. Some came with questions only incidental to the core subject matter; others wanted to write on the whiteboard and explain their ideas in front of the group; and there were even those who asked to cover additional topics not on the curriculum. At those scene changes when actors and props re-arranged themselves into different configurations, I would fade into the backdrop of supporting props as each participant, in turn, stepped into the spot light as performer and director. I had become the understudy and would only intervene in the case of misconception or error.

Changing Rules of Engagement in a Virtual World

I was now convinced that my virtual layered-media environment had indeed emulated the traditional face-to-face classroom experience. The evidence was there from the field texts and

the analysis. Yet, technology aside, it had not been a traditional classroom. It had had a different flavour. This was a new era of pedagogy. Those who worked alongside me in this virtual experiment had not echoed the previously articulated concerns of some who had feared that the online social/cognitive experience would, de facto, be thin in comparison to that of physical face-to-face environments. True, in our classroom, there had been no eyes to read into the soul; there had been no body language to enrich the dialogue. Yet that hadn't seemed to make much difference to our social presences, nor to our collective learning. We had had lots of laughs, a bit of personal teasing and even a few schoolyard spats. More importantly, most of them achieved their goals and went on to succeed in their mathematical endeavours.

Quintessential Pedagogy: A Dynamic Interlocution of Streams of Consciousness

Anagnostopoulos, Basmadjian and McCrory (2005) had written an article about the de-centring of the teacher in virtual classrooms and its ramifications on the re-construction of social norms in such environments. In contrast to face-to-face settings where the ethos of social space and interaction was well-defined within the overriding cultural norms and expectations, Anagnostopoulos et al. (2005, pp.1699-1700) had suggested that online classrooms were still open to re-interpretation:

> *Instead, teachers and students must deliberately consider how and when they will enter into the virtual classroom and where and how they will locate themselves and each other within it.*

Well, the twelve of us, who had stayed to the end of the project, had done just that. For example, in this virtual environment, there had been no Gutenberg text common to all learners. There had been no coercion to engage with any particular form of the available layered media texts. Each participant had quite simply 'done their own thing' with the spaces. Even I had experimented with media and pedagogy. We were children of a new age. Short, Williams, and Christie (1976) had defined social presence as "the degree of salience of another person in an interaction and the consequent salience of an interpersonal relationship" (as cited by Anagnostopoulos et al., 2005, p.1700). Certainly we collectively had experienced that salience one-on-one to a greater or a lesser extent. We each had defined our own level of engagement and interaction with the content and with the others. There were really no rules and certainly no expectations as to how and how much each participant should engage. I must admit that, before the project began, I had absolutely no idea what to expect in this developmental mathematics 'classroom' experiment. I simply moved with the moment and hoped that I could achieve my goal and my promise to those who came. 'Success' was not a word I could even define in this context because I had had no intention of examining them formally. I had imply followed my personal beliefs that learning and community were encapsulated by continuous communication through language and the regular habituation of a gathering place.

The Centrality of Language and Place: The Heart Beat of Learning and Community

The answer as to whether my pedagogy changed in response to the virtual environment is two-fold: no, not in essence but, yes, in presentation. Working in a web conferencing, synchronous environment really didn't change my underlying philosophy or approach to the pedagogy of mathematics which I had previously used in face-to-face classrooms. The virtual face of language remained much the same as it had been before but customized, as had always been the case, to the students at hand with whom I was about to engage. The difference had had to do with the additional media I could draw upon to illustrate and explicate certain of the ideas, thereby affording a much richer presentation with more texture and colour. Whether the change from a physical to a virtual setting had changed the teaching/learning dynamics significantly was to be determined by the participants themselves. From the set of responses to all of the research questions, I concluded that this virtual experience had not been significantly different from those I or they had had in previously attended face-to-face university classrooms – with **two notable exceptions** – the teacher-student continuum of pedagogical control during the project, moving back and forth like a gentle pendulum swing, and the teacher-student continuance of social connection for months and even years after the project had ended.

What, for me, was a rather surprising outcome in the research project was the extent to which so many of the participants engaged in their learning and went on to pursue their dreams. Perhaps that contains one of the secrets of good pedagogy and teacher role-remodelling in mathematics settings – both online and offline. Shower them with attention, in one way or another, and definitely provide an array of asynchronous or synchronous options but allow each student to be free to choose his or her individual path of learning. In other words, loosen the rules of engagement. The free-form, information-rich, setting of the Internet affords an infinity of avenues for students to pursue their learning goals. With some guidance from a mentor, such explorations can greatly enhance the students' educational experiences and free them from the emotional straight-jackets of the past – in particular the affective trammels of a negative self-image, lack of confidence in one's ability and the sense of having no control.

I am of the opinion that the emerging role of the teacher in online settings can be instantiated through a moving continuum of theatrical production guises as diverse as: script-writer, set designer, stage manager; director, star-performer, understudy or even a cameo appearance. In essence, the teacher should be an omnipresent stream of consciousness – providing that continuous uninterrupted flow of thoughts and feelings through the mind – traversing any communication medium which is an "extension of consciousness" (McLuhan, 1962, p.52). Each teacher can make a choice as to which roles he/she will undertake personally but it is imperative that the teacher ensure that **all** roles be accounted for, by various and sundry, so that the resulting production is engaging, meaningful and pedagogically sound.

References

1. Aoki. T.T. (2005). Teaching as indwelling between two curriculum worlds. In *Curriculum in a New Key: The collected works of Ted T. Aoki,* (pp. 159 – 165).

2. Anagnostopoulos, D.; Basmadjian, K.G.; McCrory, R.S. (2005). The decentered teacher and the construction of social space in the virtual classroom. In *Teachers College Record,* (pp. 1699-1729).

3. Burbules, N.C. (2006). Rethinking the virtual. In *The International Handbook of Virtual Learning Environments,* (pp. 37-58).

4. Dewey, J. (1916). *Democracy and Education: an introduction to the philosophy of education.*

5. Dewey, J. (1938). *Experience and Education.*

6. Gadamer, H.G. (1989). *Truth and Method.*

7. Gadanidis, G.; Geiger, V. (2010). A social perspective on technology-enhanced mathematical learning: from collaboration to performance. In *ZDM,* (p. 91).

8. Hollander, J. (1961). *The Untuning of the Sky.*

9. Lamberti, E. (2011). Not just a book on media: Extending the Gutenberg Galaxy. In *The Gutenberg Galaxy* (2011 edition) (pp. XXV-XLV).

10. McLuhan, M. (1962). *The Gutenberg Galaxy: The making of typographic man.*

11. McLuhan, M. (1964). *Understanding media: The extensions of man.*

12. Peschke, J. (2008). Moving ahead to the future by going back to the past: Mathematics education online In *Journal of Computers in Mathematics and Science Teaching,* (pp. 123 – 133).