

## Chapter 4: An auto/biographic analysis of five illustrative moments in my career

### 4.0: Introduction

As indicated in chapter 3, this chapter represents the formal analysis of the five illustrative moments using the auto/biographical method that has been adopted for the study. My descriptions of the IMs have been included in the appendices 2-6 to facilitate cross referencing. They are to be treated as  $a@t_i$  where  $t = \text{time}$ . I have, however, also included as Appendix 1 a scanned copy of a hand-written journal, compiled as indicated elsewhere whilst I was in New Zealand. This is to be seen as  $a@t_0$  since it was a live document and is closer to being accorded the status of 'raw narrative'. The quantification of the other appendices as  $a-e@t_i$  is because they are the outputs of the systematic stream of consciousness into which I immersed myself so as to produce some raw material on which to work. I acknowledge, on the consistent advice of Prof. Hadfield that they are not theoretically neutral; rather they are theoretically-imbued moments precisely because they have been selected because of their 'fit' to the project (see section 3.1.6).

In order for this chapter to make sense, it is advisable to start by reading the IMs in chronological order. Appendix 1 is worth reading as an actual historical artefact. Appendices 2-6 are to be read without referencing to the colour-coding that has been super-imposed on them as part of the reflexive process discussed in section 4.2 below. They should be read as autobiographic narratives.

The outputs, outcomes and effects of being inside these IMs are addressed by the second stage of my process which looks at each IM from a journalistic point of view using tried and tested questions such as: who?, what?, when?, where?, why? An interesting cross reference for this is

Gibbs' work (see Jasper, 2003 pp. 78-79). In that schema, the questions chosen to stimulate thinking are:

"Where were you?  
Who else was there?  
Why were you there?  
What were you doing?  
What were other people doing?  
What was the context of the event?  
What happened?  
What was your part in this?  
What parts did other people play?  
What was the result?" (Gibbs, 1988 in Jasper, 2003 p. 78)

Helpfully, Jasper (2003) presents a number of models such as this for reflective practitioners to use in the context of the health and helping professions. Consistent in each of the models e.g. Gibbs (1988, see below), Goodman (1984, see below) and Rolfe et. al. (2001, see below), is the requirement to pose of oneself questions as stimuli to trigger reflective processes. What sets auto/biographic research methods apart from this reflective practice model, is the absolute requirement to convert questioning into action and this is what draws me back to the dialogic-hermeneutic of Gutierrez (1971) on the one hand and the reflexivity of West (2004) on the other.

At the third stage of my process I reflect on the IMs thematically, in keeping with the framework for auto/pedagogy that is emerging from this study. Thus I have a divided section 4.3 into four, enabling me to carry out a systematic reflection on the contribution of each IM to  $N_1$ ,  $N_2$ ,  $N_3$  and  $N_4$ . This is the 'horizontal' approach signified by the bean-growers wigwam, as set out in chapter 3.2.

At the fourth stage of the process I reflect on each of the IMs for what they contribute collectively to the development of my thinking, knowledge, skills and understanding. This is the

vertical approach enunciated in chapter 3.2. It sets up the opportunity to set out some summative reflections which are recorded in section 4.5.

#### **4.1: Stage 1: Descriptions of the IMs ( $a@t_0$ and $a@t_1$ )**

"In every case, the form chosen, the style used, is expressive of the person writing and constitutes an essential part of the autobiography." (Abbs, 1972 p. 20)

In this first series of self-consciously theoretical reflections on the IMs, I will be writing in a way that is expressive of myself and I intend also to use the version of Gutierrez's (1971) reflexive cycle I set out in section 3.1.4. So I will look at each IM for what it says of the interpretations I made of the context, the readings (scriptures<sup>51</sup>) and actions that arose from reflections on the challenges I faced during each moment. I intend to tease out also what impact this had on my career development. This will be a first level hermeneutic. I imagine that this is similar to what it would be like to write an autobiography. I am retrospectively interpreting events whose origins and motivations were, at the time, accidental. In so-doing I am operating in keeping with another tenet of Abbs' work:

"The central concern of all autobiography is to describe, evoke and generally recreate the development of the author's experiences." (Abbs, 1972 p. 7)

I am also happy to note at this stage that these reflections are very much part of the formative work of the hypothesis, though they can never be entirely disassociated from the underpinning framework because they would not have been selected as IMs had they not passed the reflexive process leading to their inclusion (see 3.1.6). This is similar to that described by McDonagh as, 'the completed and unfinished task.' (McDonagh, 1979 p.13) He writes,

"In so far as autobiography in its personal and social dimensions enters into theological work, it underlines theology's incompleteness and provisionality." (McDonagh, 1979 *ibid*)

Here, too, the work is incomplete and provisional. At this stage I have no way of knowing if it will become complete and propositional.

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<sup>51</sup> By this I mean the texts that were around to support my professional learning in much the same way as the organic intellectuals in South America used the scriptures to illuminate their own lived and contextual experiences.

#### 4.1.1 Reflection on IM1

Looking back on the first moment, it is hard not to come to the personal conclusion that this was a pivotal moment in my career. Once I had answered emphatically 'yes' to the question, I had stepped metaphorically onto a moving train that is still not at the end of its journey. In a sense, I had already been to the ticket office and checked in by engagement with gaming technologies as a student and in the very basic word programming training I had experienced as a new entrant to the teaching profession (It would be more appropriate to use the term 'probationer' as this was the era before newly qualified teacher status, but this might need explanation for readers of this thesis who may not have even been born when I started out on this work<sup>52</sup>).

#### Context

The context could not be clearer and, as shown in appendix 2, I can even cite the date when this moment occurred. I can even now picture the room in which it took place and I can remember some of the other things that happened on that day which, as far as I am concerned, justify my memory of 'that' moment. I recall the head's first question, "So what do you want to know?" He then looked out of the window and waited for me to speak. This was part of his eccentric interview technique. He liked people to feel uncomfortable and observed how they operated under pressure. I know this from subsequent work with him on a variety of appointments both as his head of RE and then as an elected teacher governor.

I recall being shown around the school and entering the room of the head of Art - who turned out to be an existing governor and fellow old boy of my old school. I know this because he recognised my prefects' tie which, in an act of wanton superstition, I had worn as a good luck

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<sup>52</sup> This is a deliberate reflection borne of an experience in 2004 with the second cohort of Teach First trainees. I was asked to present a reflection on the beginning of my career in teaching and I alluded to the fact that this was in 1984. One of the participants approached me during the reception and was pleased to tell me, he had been born in that year. It was five years after that this whole project began to emerge.

charm. I loved my time at school and carry memories from then with me too. That Geoff recognised the tie was probably coincidental more than causal in my appointment, though he was there later in the formal governing body interview. I also recall bumping into the head of Geography as I escaped from the 'holding room', for a brief moment to visit the facilities. He, too was an Old Josephian, one of whose brothers was in my year.

I can remember being required to fill in the Kent County Council application form, after I was appointed, in order to tie up the loose ends of recruitment; further evidence of the head's maverick approach to procedures. I can even recall a discussion with him about the Channel Tunnel rail link which was a hot local political issue at the time as its planned route was through much of the beautiful Kent countryside that has become our home. It is amazing to think that it was such a big issue then but has become an integral part of Kent life in the 23 years since that moment. A bit like technology in my life, really.

### **Readings/'Scriptures'**

At the time I was reading extensively around the vision and values of Catholic education. On being appointed, I began to cast about for readings on IT. There simply was not the glut of material that exists currently, so I tended to focus on manuals and self-help guides that came with each new piece of software and I learned very quickly the value of <F1>! Most programs, located their 'inline help' behind this button. A few had a command <help> if you went back into the operating system. Incredible as it may seem, this was at a time when there was still a range of operating systems to choose from and MS-Dos was one among many - only to become the ubiquitous Windows Operating system a few years later.

Evidencing this is impossible since I had no idea that I would need to keep the manuals as a record to be consulted in years to come and as academic references so I have to request that my word is taken for it. Reflexively, however, the fact that I made the progress in learning that I did must in some way be warrantable evidence in its own right of my engagement with auto/pedagogic strategies. I wanted to learn and sought out opportunities wherever I could, even in very informal conversations with friends and relatives. For instance, we were welcomed to the house of a couple my wife had met through the National Childbirth Trust - an obvious local network to join in with as an expectant mother moving to a new area ten weeks before the birth of a child - Coincidentally, her husband was the Head of English at St. Simon Stock School and although I assumed he'd been there for years, he was in fact only in his first term as subject leader and was finding his managerial feet too. We had a lot in common, not least our need to get up to speed with technology and he showed me some of the rudimentaries of the disk-driven file systems that our RM computers used.

### **Actions**

As a catalyst for change and learning, this was a truly critical incident and it spurred me into a few years of very intense activity. The more I learned the more I wanted to learn. In practical terms, the first thing I had to do was get access to a computer quickly. My request for one from the head was greeted with enthusiasm, though I had made what I now realize was a good business case, based around the need ( $N_I$ ) to re-create all the schemes of work for the department. It was not long before the power of the technology had beguiled me into buying my own one for use at home and I bought a second hand IBM PS2 with a dot matrix printer from my sister-in-law on which were installed some programs. For some reading this, such a statement will appear to be obvious. However, at the time, a 20mb hard disk with programs pre-installed was revolutionary! As indicated in the text of the IM, my first computer came supplied with a

disk on which were the programs and a separate disk for storing files created. At each switch on, it was necessary to upload the program to the computer's virtual memory and then insert the second disk to save the work. Having the programs 'on board' was time-saving and cost-effective.

### **Impact**

From the vantage point of distance, and with the benefit of about ten years of organised thinking about this event, it is hard to imagine that there is a moment in my career that was more critical. There have been moments that have been professionally more challenging and even career threatening, but none that so dramatically changed the direction of that career 'while I was sleeping'. (Friedman, 2006 p. 1) I love this phrase of Friedman, since it encapsulates perfectly the experience I had of setting out to learn a new piece of software or some new commands in the operating system and then two-three days later realizing that I was on top of it, not having understood how I got from point A - ignorance - to point B - enlightenment. This happened time after time, though the example I cite in IM1 of the learning of *Logistix* stands out most clearly in my mind. I can recall one moment, when I should have been concentrating on my year 11 form, and was playing with an old Apple II that had been donated to the school. There was no software on it and it was not therefore operable as an end user device - 'what a waste', I thought. It dawned on me in my daydream that each of the 'software houses' had its own word processing package, calculations package (spreadsheet), database package, drawing/graphics package and some form of entertainment software. I just wish I had come up with idea of an integrated office software bundle before Microsoft did!

Reflexivity means now that I approach the learning of a new piece of software, skill or technique with the confidence that however difficult it may appear at the outset, with the hard work that is



necessary and the resilience I have developed, in two to three days time, I will be on top of it, conscious that learning has gone on 'while I was sleeping'.

"Professionally, the recognition that the world was flat was unnerving because I realized that this flattening had been taking place while I was sleeping, and I had missed it. I wasn't really sleeping, but I was otherwise engaged." (Friedman, 2006 p. 8)

Professionally I wasn't really sleeping either, I was just engaged in getting a department back up to fitness for purpose, juggling this with bringing up a new family and the daily pressure of learning enough to teach an A Level syllabus that I had not even seen before. Whilst well out of scope for the present study, much contemporary neuroscience would suggest that learning processes do continue while we sleep suggesting that this is more than just metaphorically true:

"There is another class of reactions with a nonconscious origin shaped by learning during one's development. I am referring to the affinities and detestations we acquire discreetly in the course of a lifetime of perceiving and emoting in relation to people, groups, objects, activities and places to which Freud called our attention. Curiously, these two sets of nondeliberate, nonconscious reactions - those innate and those learned - may well be interrelated in the bottomless pit of our unconsciousness." (Damasio, 2004 p. 48)

I can only guess now at the impact on my learners. I did not systematically capture feedback or evaluation data, but I did sense that they had come to expect good quality learning materials and that they appreciated the efforts that went into producing them. What made this positive was that I found it quicker to do this using technology than the traditional cut and paste methods of yesteryear which resulted in relatively tatty looking materials. I noticed soon after that colleagues started to follow suit and to produce good quality teaching materials themselves.

#### 4.1.2 Reflection on IM2

With the benefit of hindsight this was audacious. I should be more grateful to Bob Bowie than I have been hitherto. What we achieved was pretty amazing on thin prior knowledge (N<sub>2</sub>). Each time I set about reflecting on this event, I am transported psychologically and emotionally back to room 12. It was a dark and dreary room really and I would never have imagined that it would become the teaching base for me that it did. It was already bearing the hallmarks of a great resource base for learning since I had previously taken the step of paying for the shipment of a library of theology books from Ireland that had become available through the death of a relative of our Deputy Head. I had also acquired 20 years of accumulated editions of the Catholic weekly newspaper, *The Tablet*. These had come from a priest friend of mine and I had used them regularly as a self help study aid for the A Level students researching for their extended essays.

I was not conscious at the time, however, that room 12 was becoming a learning centre as opposed to a classroom. Prior to the RE department taking it over, it had been a multi use room for children with special needs and when I went to the school it was a science lab. This meant it had lots of power points around the walls, later to become extremely useful. It was also near the office I was given to run the department which was itself next to the Chaplain's room. The office backed onto the wall where the 'library' was situated. Outside of any success I may have had with technology, I am proud that in my time there, the intellectual capital of the pupils was raised considerably by the establishment of this facilitated model of learning. What this way of working allowed was for me to focus on the development of resources for learning and it also gave me a secure venue for the citing of a network of computers.

It is a fact that I benefited from the support of the head. He had seen what I had been able to achieve with the judicious use of department funds in and around technological procurement so when three lots of £10,000 became available to procure departmental hubs, he was open to suggestion that the RE department should get one. Maths got one and so did English. I recall him saying to me, "...now you've got them, I'd better see them being used!" Such a gauntlet being thrown down was more than enough motivation to get out and find things to do with them. In IM2, I have hinted at some of the software I procured to use with the pupils on my new network. I took some risks like installing a disk driven program on all the computers even though I really had only one licence. At that stage we were not connected to the internet so tracking would have been difficult.

*'The Last Week of Jesus' Life'* (Lion Publications) became the first sign for me of how I could use technology to engage otherwise disaffected boys. The mobility and flexibility I saw with the technology inspired me to look for even more flexible and mobile resources. In section 3.2, I have rehearsed what I will call the 'John Stuart Mill incident' which was pivotal in causing me to wonder about what else was there and available to make my life as a teacher easier and the rest of my autobiography indicates that the creation of RE-Net was the start of something really quite significant.

### **Context**

The context in which this IM took place was, therefore the need ( $N_I$ ) as a head of department to find stimulating and interesting ways of getting boys to work on their GCSE studies at all levels. Looking back, I had particular concerns about those boys who were on the D/C borderline. I needed to show that we were getting the pass rate up and I knew that the roneo-vickered notes that we produced were the contemporary equivalent of 'death by powerpoint'. They hated them.

What we needed was something dynamic, 'cool' and exploitative of the type of technology that was grabbing their interest. Some of these young people were top level gamers - even in global terms.

I was very lucky to have a great team - not just Bob - it was a strong department which had grown over time and which had enabled me to concentrate and expand our horizons. I did not have to do much by way of behaviour management and the team were willing to experiment and try new things just as much as I was. They took initiative and I used the departmental structure to give opportunities whenever I could. This meant that Bob came into a context where innovation and creativity were expected and he also arrived at a time when I was really keen to push on with the technologisation of the department - 'a perfect storm'?

### **Readings/'Scriptures'**

It is a fact of history that Bob asked me to buy a copy of *HTML for Dummies* - I wish I had kept the receipt as evidence. A google search shows that there was a book of such title published in 1996 which does, however, provide support for my memory.

Eds. Tittel E. and James S.N. (1996) *HTML for Dummies* IDG Books: Foster City CA:

The disks are still in existence of the website that Bob created. I have them, though I have no disk drive capable of reading them now! This, is an indication of just how far and how fast technology has moved in that time. The 3.5" floppy disk is a thing of the past and yet its existence at the time was utterly revolutionary and game changing. The website Bob created was contained on four floppy disks. It was a text-based artefact but it was just a whole lot better

than the cyclo-styled sheets we gave out and it gave access, above all, to learning materials on a computer. It made the RE department 'cool'.

### **Actions**

Whether it was a matter of pride or again natural inquisitiveness that prompted me to action is open to debate. What I know is that I was prompted to learn to code myself so that I could also create web pages. I watched Bob over his shoulder and observed the rudimentaries. I also borrowed the book for a while and picked up a few tips that way. It is worth noting that I understood only too well, the need to save files in the correct format. In those days, coding was done in simple text editors like 'notepad'. This was exciting because it was as close to the heart of making machines work as I had ever been. There was a real sense of thrill when the coding was complete, especially if you then opened up the .htm file in a browser and watched as the page started to load as intended. For me, the enhanced thrill came when something hadn't worked and the page didn't display properly and it was necessary to go back through the code and correct the error. Clicking the <refresh> button was almost exhilarating!

I found that I could work for hours on web pages without a break because it was great fun. Linking pages together and building an architecture for the site was also fascinating as it really forced us to think about how we would best arrange the data we wanted the young people to see. Who knows where we would have ended up if I had not taken the chance to move into Higher Education in 1998. By that time we had a fully functioning intranet running in room 12. We had added value to the original site by incorporating pictures that one of our colleagues had brought back from a school trip to the Middle East, including Israel, Palestine and Jordan. To do this we had to learn how to create image banks and to store the pictures appropriately so that we could point to them in the browser using the <img src = "?"> command.

The fact that I had, by then several years experience of organising folders and file structures meant that I had a lot of prior knowledge on which to draw (N<sub>2</sub>). I would also argue that the passion for learning and my engagement with it was certainly auto/pedagogic, even if I did not know it at the time.

Moving to Christ Church gave this whole learning process a further boost. I arrived just at the point when Phil Poole was trying to increase the online offer to students on the PGCE Route to QTS. He was keen to support the innovative work I had been doing at St. Simon Stock and gave me access to a number of tools which aided the process. Here I learned about html editor software which was WYSIWYG and had a number of pre-programmed html tags. This certainly speeded up the process. Some time after that I was given access to MS-Frontpage which was Bill Gates' attempt to control web coding and became the default tool for people running pages out of CCCU. As an approved web author, I was also invited to attend training sessions and at one of them - around 2002 - we were given a workshop on a new scripting language called PHP. It is PHP that drives Facebook and is arguably one of the most significant technological developments of the last decade<sup>53</sup>. All this would appear to be evidence of N<sub>3</sub> in my autobiography.

### **Impact**

It would be fair to say, looking back, that I was learning fast. Not only was I, in the context of my career, learning to lead and manage on the hoof, I was learning fast about technology.

Learning I developed at the time (IM2) has stayed with me till this day and was carried forward into work subsequently undertaken on the TTRB and, of course, when we used the RE-Net

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<sup>53</sup> See section 2.4 where I talk about how my professional knowledge around PHP became useful for some volunteering I undertook in 2008 and which vice versa has enabled me to move on professionally - more evidence of the dialogical and cyclical nature of the auto/pedagogic process.

platform as the basis for creating the TDA-funded networked learning community from 2005-2010. Skills acquired then are used today for maintaining my own web presence, for running a *Moodle* site and for supporting marketing activities around my own and my children's hobbies and interests.

Moreover, I learned a lot at this time about digital photography - especially file formats for images. I began to understand more about how much more 'data' was contained in a photo than a piece of text and I also reinforced prior knowledge (N<sub>2</sub>) about the need for organisational accuracy and effectiveness. Getting one character wrong in a filename meant that a page wouldn't work. This gave me pause for thought about the power of computing on a daily basis and led me to further inquire about the great urban myths about technology, like the one about the missing comma in a line of code which brought down Apollo 13. I still find it hard to reconcile the fact that all this was going on nearly thirty years after Neil Armstrong first set foot on the moon. It also gave me pause for thought about how the choices I had made at school pushed me down a career pathway that precluded formal learning in science and technology. Software engineering is really good fun and I realize now that the 'liberal arts' direction of travel that I embarked on at the age of 14 meant that for over 20 years I missed out on the fun of making things. Serendipitously, on looking for another reference in Isaacson's authorised biography of Steve Jobs, I came across this observation,

"The creativity that can occur when a feel for both the humanities and the sciences combine in one strong personality was the topic that interested me in my biographies of Franklin and Einstein, and I believe that it will be a key to creating innovative economies in the twenty-first century." (Isaacson, 2011 p.xvii)

I am not for a moment suggesting that my autobiography should be evaluated alongside the narrative accounts of Franklin or Einstein but I do find it interesting that the 'mathophobia' to which I refer in IM1, and which was a driver for some of my learning of spreadsheet technology

did inhibit my progress in the sciences - looking back. Ironically, it was the fusion of technical know how with humanities-based subject knowledge (At the time of IM2, I was after all a religious education practitioner) which provided the creative energy for RE-Net. At that time a considerable portion of the GCSE syllabus was spent on the words and works of Dr. Martin Luther King Jnr (1929-1968), and I used to read for pleasure his lesser known theories on science and other aspects of the human condition:

"Science investigates; religion interprets. Science gives man knowledge which is power; religion gives man wisdom which is control. Science deals mainly with facts; religion deals mainly with values. The two are not rivals. They are complementary." (Martin Luther King, Jr. 1963)

It is worth re-stating here that there were moments around this time when this did feel like I was making magic - a phenomenon about which contemporary RE specialists needed to have a view. Whether others saw our efforts in this way is open to question but I can really empathise with the opening words of Naughton's (2000) book:

"... And as the picture builds the solitary man smiles quietly, for to him this is a kind of miracle." (Naughton, 2000 p.7)

I wasn't expecting to find in a hard-nosed scientific study of the history of arguably the most mechanistic of all inventions, the computer, a writer prepared to use the language of my 'home' discourse. But why not? After all, this is a multi-disciplinary study.



#### 4.1.3 Reflection on IM3

Professionally speaking, no moment in my autobiography has been more reflected on than this. I used it as part of the formative process for the study and I refer to aspects of it extensively in other sections of the thesis (see e.g. chapter 2.1 on Polsani's influence on my epistemology and in chapter 2.3 on the development of the framework)

One of the reasons for this is that although academic tourism (i.e. the practice of travelling to places far and wide to participate in conferences) is a well-known phenomenon, I consider myself lucky that I was granted permission and funding to attend ICCE 2002. There was some audacity in tagging a week's holiday onto the trip so that I could explore New Zealand, and I had a great time. My learning was nonetheless rich, profound and abiding. Happily, on this occasion I have plenty of firsthand evidence of the value of the trip and I was delighted to find in my notes the handwritten statement of what I had learned (see appendix 1) which I must have jotted down in the airport at Auckland before embarking on the flight home.

My erstwhile head of department and close friend, Prof Kit Field, used to tease me, that I was the only person working on e-learning that had to physically travel to the other side of the world to learn more about the phenomenon. 'Surely', he argued 'you could do all this from your desk'; meaning, of course that the world was already connected via the internet, obviating the need for international travel. Nonetheless, such was the enormity of what I learned that I would not have missed it for the world. I acknowledge, however, that this does beg the question of the rectitude of e-learning only modes of study. It is why I dropped the notion of e-learning in my discourses - I can evidence (see Appendix 1 and 2) the profundity of learning in multi-modal settings.

This trip does, therefore, conform to any definition of a critical incident (See Jasper, 2003). It has outstanding significance in my life and career and is pivotal in this study.

### **Context**

The actual pain of travelling non-stop for thirty-six hours would be sufficient visceral evidence of having been there! The jet lag I experienced on return coupled with the emotional roller-coaster that was the trip left me with feelings of exhaustion that were very real and I can still recreate the feeling of the fatigue that descended on me once home, showered and ready to dispense gifts to the children that I had collected on my travels.

The reason for the trip was purely educational. I wanted to immerse myself in the discourse of computerised education, as a learning process by which I could lead on the E-China bid. Many of the 'greats' of educational technology were present at the conference. Marlene Scardamalia, Alfred Bork, Bob Lewis and, as referenced in IM3, from the UK, probably e-learning's principal proponent at the time, Gráinne Conole. I would argue now that the process of discovering the ICCE 2002 conference was both an outcome and a part of an auto/pedagogic process.

When tasked with leading on the E-China bid, I had no idea where to begin and was thrown back on my prior learning (N<sub>2</sub>). I had to use the meta-cognitive search skills I had been developing to think through the places one might look for inspiration and wisdom. I had a list of names from the Dean as well as contacts that I was provided by James Learmonth (mainly people in the British Council and other experts in overseas education) but that was about it. I can recall doing desk-based research using terms, for example,:

- Education in China
- Teacher training in China

- Chinese education
- Chinese teacher educators

It was, however, a structured reading of the ESCALATE website that pointed me to the conference and gave me the thought that to attend would put me in touch with the very people with whom I needed to liaise.

### Readings

I still retain the disks that were provided at the conference. All the papers were available electronically which gave rise to some amusing encounters. In their home countries, most of the participants had clearly ticked the same box as me on the conference registration page which gave the choice of an electronic or paper-based version of the proceedings. On arrival they were keen to follow each paper from a hard copy and were visibly irritated with the organisers who kept saying, 'No! Sorry! You ordered an electronic copy'.

On that disk are some of the papers that have been formative in the development of this thesis, most notably Polsani, (2002, 1) and Lewis (2002). Periodically, I spin the disk and relive the experience. Even now, at times when I need some inspiration, I also dig out the photographs as an *aide-memoire*.

In this photograph, it is possible to see the entrance sign to the university at Palmerston North where I met with Marion Court, Bill Anderson and Mary Smith. Serendipitously, it was Bill who was putting together a major work on e-learning published about six months after my visit (see Moore & Anderson et. al., 2003).



There is something quite powerful about the visual images that are collected during a lifetime. I was very glad that I borrowed a digital camera from the university for this trip as it does reinforce the fact that I was there. I carry some memories as mental images but the albeit small number of pictures that came back with me on 'floppy disks' do help keep the memories alive. Again, it is interesting to reflect on how technology has changed since then. That camera had about enough battery life for fifty pictures and I was only able to charge it once and that was at Massey University in the ICT department where they had a collection of chargers. Compare that with the tiny batteries that are in modern cameras which can sustain the capture of hundreds of photos that are stored on media a fraction of the size of the disks I carried with me. By the time I went to ICCE 2005 in Singapore, I was dependent solely on the camera on my XDA II but still filled up all the solid state memory with images that I have used in professional contexts ever since.

### **Actions**

The diagram I constructed in Takapuna (see pp 334 and 335) is evidence of direct action that I took as an outcome of the reflexive process in which I engaged at the time. It stands as a genuine artefact of a piece of auto/pedagogic work. The iterative nature of the hand-drawn version (classically in the style of a 'bag of a fag packet' drawing) followed by its tidying into a .ppt slide is indicative of the thought processes I was going through at the time. As can be seen, I was constantly trying to apply learning I was acquiring by the minute into professional settings where I would one day be leading the learning. It is not an arrogant claim to say that much of this thinking made its way into the policies, procedures and practices we set up for *iteach* and some of which are still in train in the new release of that programme: (see <http://hiberniacollege.com/schoolofeducation/hibernia-college-uk/>)

## Impact

The impact on me of this trip is incalculable. In practical terms it spawned two pieces of direct work: A CPD report for the University as an output of a funded process of professional learning; and a conference workshop which I delivered to the Faculty's annual conference in February 2003<sup>54</sup>. Much of what I was writing at the time focused on N-Learning, a term I learned from Polsani (2002, 1). It was short step from that to the metaphor of /learning that I started to write about and led to the invited presentation on iPD that I gave to UCET in 2006. Both Jones (2006) and Isaacson (2011) confirm that 'while I was touring' Jobs and Co. were launching the iPod. That really is synergy.

"We knew how cool it was, because we knew how badly we each wanted one personally. And the concept became so beautifully simple: a thousand songs in your pocket." (Jobs, cited in Isaacson, 2001 p.390)

Although written some ten years later, this quotation cites Jobs from around the time I was in New Zealand and above all, though the term is inappropriate for someone of my age to use, what I saw at ICCE 2002 was 'cool' and I knew instinctively that this was what I wanted learning to be like, for children, certainly but also for teachers. As well as having a thousand songs in my pocket, I realized standing there in North Harbour Stadium in Auckland that technology would now allow people to carry all they needed for career development learning in their pockets. It was here that a Japanese delegate lent me his laptop so I could connect over wireless to my e-mail. It was on the road trip that I spoke with my family by cell 'phone 12,000 miles away by the power of satellite technology and realized that the physical world was getting smaller in inverse proportion to the expansion of the learning world. All one needed was a node on the network and that, with apologies for the emphasis, one could carry in one's pocket.

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<sup>54</sup> I called this workshop *Hakas Huka, Holism* (Hughes, 2003)

Reflecting now on this, is fascinating. The node in my pocket is called a Blackberry, it connects me to the internet via the Orange network and I synchronise data and digital artefacts between it and my PC using the Apple *itunes* software. It carries about a thousand songs. It carries about 500 photos and it carries an incalculable amount of e-mail. It enables me to browse the internet, to connect to friends, family and facebook and it also provides access to twitter by which much of my contemporary professional learning occurs. If I lost it and it were to be found it would be an electronic artefact containing, some might say, a digital account of my life - an automated autobiography!

#### 4.1.4 Reflection on IM4

Re-reading the correspondence relating to the TTRB, as I yet again attempt to reduce the size of my ongoing Canterbury account, I am reminded of the precociousness of that project. The need to do that ( $N_I$ ) arose from the technological reality that my now 13 year old account was about to exceed its limit. I wish there were time here to reflect on how ICT systems and those who manage them often, ironically, limit that which is potentially unlimited and boundless. That observation is itself a metaphor for IM4 which was in many ways an attempt to organise all the existing 'knowledge' for and about teacher education, to set limits and parameters. I know this was Leask's vision on commissioning the project (for a retrospective account of this see Leask, 2010 p.7). The point being that historically (from 2003) Leask had been trying to operationalise her vision of organising all the knowledge about teacher education using the power of technology (Leask, *ibid*).

With hindsight, one might contextualise the design, implementation and development of the TTRB to have been chronologically in that part of the history of technological evolution which may yet become known as the era of 'knowledge management'. Google was born in 1998 (see, <http://www.google.com/about/corporate/company/>). Zuckerberg was working on precursors to the Facebook in 2003, 'The Facemash' (Kirkpatrick, 2010 p. 21); Jimmy Wales launched Wikipedia in 2001, according to its own entry on its own website (<http://en.wikipedia.org/wiki/Wikipedia>)<sup>55</sup>; and Bill Gates at Microsoft had predicted all this according to Friedman,

"One of Bill Gate's early mottoes for Microsoft, which he cofounded [*sic*], was that the company's goal was to give every individual "IAYF" - information at your fingertips." (Friedman, 2006 p. 57)

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<sup>55</sup> There will be people who will opine that wikipedia is not a reliable resource since anyone can post to it, however the launch of a website is an historical event since there is a moment in time when the ftp activity ends and the site is live.

Wales' vision was to provide a locus for 'user-generated' content about anything. Leask's vision was to provide a platform for the teacher education community on which it could place its own user-generated content. The differences were that she wanted it all organised around an agreed schema so that it would be searchable by meta-data tagging but also that it would have been quality-assured and peer-reviewed before being released to the community (see Leask and White, 2004 p.1). I reflect on this as a kind of academic reaction to the explosion of Web 2.0 technologies.

### **Context**

The antecedents of this project are important to state at the outset of reflections on IM4. As can be seen in appendix 5, Mike Blamires was already connected into the Initial Teacher Education Professional Resource Networks or IPRNs as they were called. He worked on the behaviour4learning website alongside others. CCCU was also represented through the team of authors that contributed to Multiverse. It is a fact of history that Mike could not make the briefing at the TDA for the TTRB bidders and I was asked to go in his place. I can honestly and with some amusement recall the use he made of technology to join myself in with Paul Charman who was to become the project leader and for whom I now work occasionally as an independent. Tactically we needed to look like an existing partnership. Mike sent me a digital image of Paul he had taken on his reverse action webcam mounted into the lid of his *Sony Vaio* computer - this was state-of-the-art technology in 2004. He then sent Paul an image of me captured on the same device during one of our Faculty ICT Committee meetings.

I could reinforce my belief that I was there by going back through e-mail accounts, or trawling through the archived site

(<http://webarchive.nationalarchives.gov.uk/20101021152907/http://www.ttrb.ac.uk/>) to find



those articles that I reviewed, wrote or edited for the site, or simply rehearse from memory the meetings we had at the Institute of Education, at the Forvus<sup>56</sup> headquarters in Clapham or even the steering group meetings at the TDA's office in central London. There are also concrete artefacts that validate my claims to have been present, most notably the paper published in the proceedings of ICCE, 2005 in Singapore (Blamires and Hughes, 2005)<sup>57</sup>. What matters most, however, is not so much that I was there but what I took from this particular illustrative moment.

### **Readings/'Scriptures'**

As a reviewer for the TTRB, it was necessary to read a lot of material from across the whole domain of teacher education. Directly relevant to the my needs (N<sub>1</sub>) of the project, I found myself learning about meta-tagging (the skill of applying meta-data) and the advanced art of creating ontologies and taxonomies as if one were a librarian. I came to understand through reading and discussion with Phil Sheffield (N<sub>3</sub>) all about the 'Dublin Core' i.e. those bits of data that librarians use to sort information according to type, format and genre. To my shame, I came across, for the first time in my career (and that includes the successful completion of a Masters Degree related to education) the British Education Index of which Phil was, and remains, the manager.

There were times when I felt out of my depth - a derivation of N<sub>1</sub> - , but always strove to get on top of my understanding so as to not let down the partnership. I forced myself to get on top of the templates that we were required to use on the system and this required me to think critically about each object. This was so that the meta-tags could be applied appropriately. Learning to

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<sup>56</sup> A subsidiary of RM Data Solutions Ltd.

<sup>57</sup> Here is the abstract to the paper which was itself peer-reviewed and remains in the public domain, "In this paper, we describe work in progress on the UK Teacher Training Resource Bank. This is an online database of articles, artefacts, materials and resources which have been compiled from the history of teacher education. The inclusion criteria for the site are being evolved in an organic and resourceful partnership between Canterbury Christ Church University, The Institute of Education's e-librarian, RM/3T and The British Education Index. Each object added to the site is assigned a unique identifier and carefully controlled meta data." (Blamires and Hughes, 2005)

use the BEI terms was a considerable effort which taught me how librarians construct meaning around the education discourse - a derivation of  $N_3$ . There were times when I thought this was often inaccurate or baffling - "why would you refer to  $x$  as this"?

At the same time I was having to read about SQL technology and the Microsoft asp.net solution since these were the technologies that were driving the TTRB. In learning this, I also came to appreciate the *MSN* search technology and how it made use of real word searching as opposed to the more traditional meta-data searches employed by the BEI. At the time, Microsoft were having to come to terms with the explosion onto the internet of Google with its much more powerful and yet apparently less complex search tool. *Windows Live Search* or *Bing* as it now is known was a very pale imitation of that which was 'Google's mission... to organize the world's information and make it universally accessible and useful.' (see <http://www.google.com/about/corporate/company/>).

### **Actions**

During this illustrative moment I spent a lot of time listening - actively. I also practised a lot in the quiet of my office or home office. Mike and I ended up sharing a room and we co-constructed knowledge and understanding by working on the system together and sharing bits of wisdom and intelligence that we were acquiring simultaneously. Mike was already into schemas and understood the 'semantic web' well enough to be able to draft a first pass of what the TTRB schema would be - a working example of  $N_3$ . This was useful peer-to-peer learning as I was able to replicate this in the context of building a meta-data schema for RE-Net (version 3) - a working example of  $N_4$ . That in turn led me into the more complex and business-oriented world of data analysis since, again, over the horizon, came the astonishing tool, '*Google Analytics*'.

As part of our initial contract with the TDA we had had to agree to report out monthly usage statistics: Numbers of log-ins; numbers of users; numbers of downloads; most visited pages and so on. Built into the TTRB infrastructure were SQL tools which allowed us to pull off the 'back end', what to me were, very sophisticated reports. And then came again Google. *Google Analytics* takes such activity to a whole new level and it was not long before I was producing very sophisticated data reports which certainly impressed colleagues on the RE-Net Steering Group. The like of this technology had not been seen before in the RE community; nor since. Whether the TDA were impressed remains an open question. They were however always polite and received the reports with good grace and a lot of questions.

### **Impact**

Again, what had started out as a simple response to the request for me to attend a meeting in my role as Faculty of Education, Director of Learning and Teaching with ICT, resulted in me in a different role and with a whole new range of technology-related skills. There is no doubt in my mind that had this sequence of events not occurred I would not now understand SQL technology, would be oblivious to the dark art of meta-data schemas and might never have heard of the British Education Index or its very useful sister technology, Educationline. The latter has been used for this study. Most significantly this IM plugged me into a series of networks from which I still benefit (N<sub>3</sub>). It has resulted in me securing self-employed work both as a direct contract worker for RM Data Solutions and also now as a piece-work interpreter of data reports arising from RAISEOnline and the Fischer Family Trust.

#### 4.1.5 Reflection on IM5

"As well as being the greatest invention since, oh, that round thing that cars tend to have four of, or those thin slivers of bread that come in packets, the iPod is also obviously a thing of beauty. And I think I am beginning to fall in love. Seriously..." (Jones, 2005 p. 4)

There would be no IM5 without the iPod. Reflections on IM3 set out in 4.1.3, show the beginnings of a series of thoughts that led to the dissemination of the concept of *i*"PD around 2006<sup>58</sup>. A benchmark for the start of these reflections is provided by the abstract of the paper published by ICCE (2006);

"This paper seeks to enunciate a theoretical framework for *i*-enabled Continuing Professional Development (CPD). It deliberately avoids the metaphorical application of the prefix 'e', to symbolise a more holistic approach to professional development than is currently afforded by assumptions in e-learning. Drawing on the Apple Macintosh™ metaphor of 'i' approaches to life (*i*Tunes, *i*Movie, *i*Pod etc), it plays with the more personal contiguities of 'I'-ness. It extrapolates from the post-modern concept of the 'self', which can be seen to be central to all personal development activities and then explores what it might mean where some of the factors<sup>59</sup> identified here, interactive, intelligent, international and integrated are taken to be critical in effective professional development." (Hughes, 2006)

The citing of my own work could, on reflection, be regarded as a vanity. I think not. The inclusion of such material is in keeping with the auto/biographic method of the study. Here I have an authentic statement of the evolution of my thinking at the very moment which this illustration is trying to excavate for meaning. This is as close to being an artefact  $e@t_0$  as the hand written journal that is appendix 1. It comes direct from the professional context in which I was working and is, at worst,  $e@t_1$ . That is, it represents the output of structured thought processes as a genuine attempt to say something new.

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<sup>58</sup> It is again, a fact of history that I was not able to attend ICCE, 2006 which was in Beijing, China but a paper I submitted was peer-reviewed, accepted and was published in the proceedings and is still available online (see Hughes, 2006).

<sup>59</sup> The use of the word 'factors' explains my adoption of it as the term for defining the characteristics of learning in the zone of optimal auto/pedagogy

## Context

Alluded to in 4.1.3 were the emerging thoughts I had had in New Zealand about mobility, nodes, 'miniaturisation'<sup>60</sup> and digitisation. Whilst rehearsing them here so that this IM can be read as a stand-alone 'critical incident', I want to focus more on the PD in *i*"PD. By 2006, I was in dual roles. I was still a member of the Department of Professional Development at CCCU with a teaching load that included some middle level leadership and management work, day courses for serving teachers and an increasing amount of representative work for the University on national committees. I was also still directing the TTRB and RE-Net, as well as my seconded role as Faculty of Education, Director of Learning and Teaching. This entailed me in constantly working to professionally develop colleagues across the Faculty, especially in their uses of ICT in their everyday work.

It was in this context that I was continually spiralling in my thinking between epistemology and technology. How did teachers acquire the knowledge, skills and understanding that they require in the 21st Century, especially when budgets for training and development were very much under pressure<sup>61</sup>? It should be borne in mind also that, as the TTRB director responsible for networking and dissemination, there was still the significant influence on my thinking which was Leask's desire for reliable sources of information (see Leask, 2010). The mission of the TTRB was to ensure that teachers' and teacher educators' professional learning should be authentic, authoritative and accessible. I was into providing education and training for them in ways that were integrated into their daily work, made use of interactive technologies so that they could learn while busy and mobile, gathered insights from international settings - in recognition of all that I had learned from working in Jersey, learning in Malaysia and Singapore and

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<sup>60</sup> The act of compressing data and software so that more of it can be 'squashed', to use Jones' (2006) metaphor, onto miniature solid state 'flash' memory.

<sup>61</sup> At the time of writing (January 2012) there have been even more deep cuts to CPD budgets in schools and universities as politicians try to work their way out of the economic crisis.

travelling in New Zealand -. Above all, I wanted it to be grounded in research-based evidence. It was from this that I selected the word *intelligent* as one of the 'i's of the theoretical framework.

An important observation I would like to make now on reflection, is that I would love for this thesis to have been about *i*learning. That was the shorthand term I used in talks, presentations and development work from 2006 - 2008. Indeed, it found its way into the programme that I led from inception to implementation, *iteach*. I guess it would have been a huge leap for this study to align it with the iconic nature of the *i*Pod and its famous predecessors the *i*Mac and *i*Tunes.

"One of the copywriters suggested they called it a "Pod". Jobs was the one who, borrowing from the *i*Mac and *i*Tunes names, modified that to *i*Pod." (Isaacson, 2011 p. 390)

### **Readings/'Scriptures'**

Even before Jobs had adopted the *i* as his metaphorical nod to the internet first - the *i*Mac was designed effectively as a thin client on the web - and then to personhood, in that a self arranged its music using the *i*Tunes software, Michael Fullan (e.g. 2005) had used three 'I's to model the critical factors in school improvement and change management: Innovation, Implementation, Institutionalisation<sup>62</sup>. Whilst working on a CPD project in Jersey around 2002, my co-trainer Tim Tatham used the following model to illustrate the process of educational change (see figure 25). I refer to this explicitly in the illustrative moment that is IM5 (appendix 6)

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<sup>62</sup> See e.g. Fullan 1999, Barber & Fullan (2005), Fullan et. al. (2012)

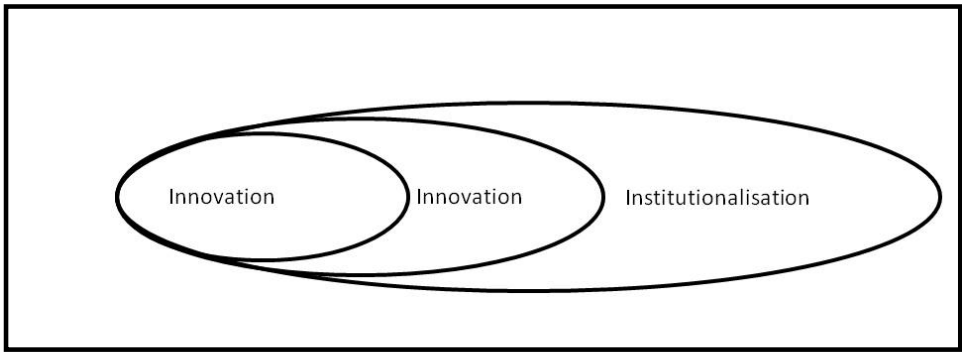


Figure 23: Fullan's 3 I's of Educational Change

The influence of this diagram on my thinking can be seen in figure 5: N<sup>4</sup>#2.

This is a good moment in the reflexive process to pause and note again, for the purpose of reinforcing the dialogic and spiralling nature of the learning in this project, that this diagram has been in the back of my mind since I saw Tim using it and it popped up as a way of attempting to draw out the relationship between the N's. It would be vain again to say that I believe there is a flaw in Fullan's hypothesis which may account for the failure of so many educational change programmes - perhaps especially those involving technological implementation. What appears missing to me is any notion of impact or influence. Fullan argues (1999) that failure is caused by the inability to institutionalise the change intended across an organisation. This relates back to the issue addressed in section 2.3, where the taxonomy of types of adopters was set out (see also Salmon, 2000 p. 71). I would argue that most resistant behaviour comes from the failure of change agents to either 'sell' the benefits of their innovation or for there to be a lack of need (N<sub>I</sub>) for change in the minds of members of the organisation. The impact on them is rarely addressed (e.g. savings on time, reduced effort or reduced cost thereby releasing funds for alternatives and so on) nor the influence such change can have on learners or learning. It needs to be noted that Fullan (1999) was working exclusively in educational contexts albeit mainly in Canada.

The relevance of this thinking to the overall project seems to be the need for the benefits of educational technological innovation to be tied to the needs of learners and learning facilitators. The relevance of the model to the study is the demonstrably cyclical and spiralling nature of the process whereby innovation, implementation and institutionalisation are constant and interdependent. Each new institutionalisation may well require a re-innovation for the new context. This will require new implementation and in the process the organisation may need to re-learn the attenuated model or method. Take, for example, a managed learning environment (MLE). Each iteration of the MLE (e.g. *Moodle*, *Frontier*, *SIMS Learning Gateway*, or *Blackboard*) for each new instance will need to be 'badged' to the institution. Each new release will need re-institutionalising for the revised context and change processes may need to be re-joined with members of the organisation. In technological terms, this is facilitated by formal and regular use of feedback loops.

Ignoring the criticality of feedback loops (see Waldrop, 1992 or Stacey, 1994) is perilous for organisations. Since change is incremental and evolutionary. It is the incremental or 'iterative' nature of software design, implementation and delivery that in some ways is the greatest gift of technology to the human project.

"That's why the old saw [*sic*] about computers only doing what their programmers tell them to do is both perfectly true and virtually irrelevant; any piece of code that's complex enough to be interesting will always surprise its programmers. That's why any decent software package has to be endlessly tested and debugged before it is released - and that's why the users always discover very quickly that the debugging was never quite perfect."  
(Waldrop, 1992 p. 282)

In my view, education technologies would be better if teachers were involved in all phases of their development from initial design through to debugging.



There are also 'bugs' in the domain of teachers' professional learning.

My point is a simple one. Continuing Professional Development programmes in the 21st Century must be tied to professional learner's needs. If you don't have an interactive whiteboard in your classroom, training for use in their functionality is pointless. If you have remote and dispersed learners without internet access on your programmes, there is no point training to use a MLE. If on the other hand - as is now the case with every teacher in a school in England and Wales - you have to be able to track and monitor the individual progress of your pupils from their 'attainment on entry', via their data-driven expected progress targets, through to their end of Key Stage outcomes, you need definitely to be trained in the use of online databases, CSV and SQL technology and the ability to manipulate data via spreadsheet technology.

CPD programmes that are not integrated into the working lives of teachers, nor based on their professional needs will not sell, however high-minded the aspirations of their designers and facilitators. It is in this context that, as I come to the end of the formal part of the study, I am currently working. Moreover the need for 'intelligent' programmes had never been more important than in 2006, though I would argue now that they are even more so. By intelligent I meant then (*e@t<sub>0</sub>*) and still mean now (*e@t<sub>1</sub>*) that computer technology (artificial intelligence being a relevant metaphor as well as the more traditional metaphors of intelligence-led policing or nursing), should be a central component of CPD programmes. As was seen in IM2 and IM4, such CPD programmes should also be interactive in my hypothesis and by this I meant - and still mean now - that teachers could and should learn by interactive methods. There are two aspects of this too. First there is the obvious human interactions that are axiomatic in knowledge co-construction post-Vygotsky (e.g. 1954); but also the interactivity that is perfectly enabled by

computer-mediated conferencing (see e.g Salmon, 2000, 2002, Kearsley, 2000, Lave and Wenger, 2008)

"Just as a natural habitat reflects the learning of the species, a digital habitat is not just a configuration of technologies, but a dynamic, mutually-defining relationship that depends on the learning of the community. It reflects the practices that members have developed to take advantage of the technology available and thus experience this technology as a "place" for a community." (Lave and Wenger, 2008 p.38)

### **Actions**

The most obvious output of this moment was the publication of the paper cited at the head of this reflection. I was challenged to write this into the strategy for professional learning across the Faculty in my embedded role as Director of Learning and Teaching with ICT and I was spurred on to provide needs-driven ICT training programmes. Arguably the most important outcome of this IM was the design, implementation and delivery of the *iteach* programme - significant because ultimately and ironically it brought about the end of my career as a practicing academic.

### **Impact**

Again, undocumented history might show that I first met Nick Breakwell in 2006. I have found an e-mail from 24th March in that year which discusses his intention to work with me on the development of a programme. This was all happening co-terminously with IM5. In my mind, therefore, must have been the theoretical framework for teachers' CPD which, in the case of *iteach*, was for pre-service training. The spiralling, dialogical and cyclical nature of my professional life meant inevitably that this framework was the foundation for the development of that programme.

In essence all the prior learning came into effect at this time (N<sub>2</sub>). The rationale for the programme, the modes of delivery and the assessment procedures were all in some way derived

from the concept of *i*"PD. That was why we called it *iteach*. It was meant to be an individualised programme of intelligent study that was integrated with the participant's life context and used internet-based, interactive technologies to overcome the obstacles to professional learning that had hitherto excluded some potentially great candidates from teaching. What had been learned over the previous seventeen or so years was now being applied in a new context (N<sub>4</sub>). At the heart of the *iteach* programme was a self wishing to become a teacher.

For me professional learning will never again be as it was when I started on my career in the middle eighties. Professional development will always now depend on auto/pedagogic processes. I will determine what I need to know. I will work out where I need to go to find solutions to professional problems and will probably join in, however peripherally, with networks that may assist this process. Learning derived from such a context will always be used in the next one that comes along.

The chronological context for IM5 at the outset was me as a member of the Department of Professional Development at CCCU. My professional concern was how to provide programmes of study that would be attractive investments for teachers wishing to improve their own practice. In serving that aim, I ended up out of that specific domain though the work continues in other contexts. Of real benefit is the thinking around this time which led to the following important insights:

- A teacher's professional learning is dependent causally on their needs.
- Once a teacher has defined a professional learning need they are already unconsciously adopting an auto/pedagogic approach.

## Summary

The case for the latter assertion is made on this basis. Reflecting on IMs 1-5 @t, suggests that need drives inquiry. The need arises from the self's interaction with the world in the context of its professional life. This may be because they know that there is something that they don't know. For example, trainees applying to the *iteach* programme, knew that they did not know how to teach - they just knew that they wanted to teach and how to do it well. I knew that I did not know how to use a MS-Dos based computer (IM1); or how to code in html (IM2); or run a teacher training programme in remote and dispersed settings (IM3); or how to define a schema of meta-tags (IM4); or make CPD programmes relevant to teachers in the 21st Century (IM5).

Both the *iteach* participants and I were motivated to turn our known unknowns into known knowns. To do this, it was necessary to embark on self-directed study so as to be able to apply lessons learned in the context of our careers. To do this, critical reflection on the exploration of the unknown was essential and each of us became our own pedagogues, learning on our own in remote, dispersed but networked contexts. It seems to fit therefore that learning driven by self, which causes reflection on a range of stimuli is in fact auto/pedagogy as defined in section 2.6.

I intend to explore this further in the next section.

#### **4.2: Stage 2: Analytical reviews of the five 'theoretically-imbued IMs (a@t<sub>2</sub>)**

In this second stage of the process, I intend to analyse the IMs reflexively using the questions that a journalist might ask: Who? What? When? Where? Why? To do this I have overlain on the raw text, highlighters in different colours so as to create a different look. This is in keeping with the phenomenological process described in 3.2 which requires analysis from different perspectives and views. The colour coding system is as follows:

Who?  
What?  
When?  
Where?  
Why?

This is a second level of reflection and is designed to look for patterns and trends in the IMs, thereby postulating potentially some 'case study logic' (after Yin, 1994).

It is a fact of history that I devised the journalistic approach to the IMs in a tutorial with Glynn Kirkham coincidentally at the BETT Show in 2008. It should be noted that the first IM, written around that time, is set out in that form making analysis more straight forward. The method was attenuated in a tutorial with Mark Hadfield in 2010, following a conversation with Neil Duncan who advocated the 'stream of consciousness' approach to the recording of the IMs - it should be noted that I have not adopted that mode fully given the consideration made in section 2.2.7 about memory. Accordingly the remaining narratives are written without form or logic which made the super-imposition of the highlighting a more interesting and potentially more useful exercise. I have applied it in the latter stages of the research process in late 2011. It was only in the first 'pass' of the exercise that I was able to define fully what I meant by each category. Before doing a second and more thorough 'pass' through the IMs, I wrote these definitions:

- Who - I have highlighted in green individuals, groups or organisations who were instrumental in the learning process - arguably pedagogical agents. I have not highlighted the names of authors whose work is cited dialogically inline in these narratives.
- What - I have highlighted in red words or phrases that signify learning or development of knowledge, skills or understanding. It surprised me on conducting this exercise the extent of the richness and diversity of such words and phrases that were returned in the analysis. Many of these were formal; others colloquial 'turns of phrase'. Here is what I found: 'pause for thought'; 'get my head round'; 'sustained analysis'; 'dawned on me'; 'inspired'; 'gave me an insight'; 'played with'; 'get up to speed'; 'realised'; 'moment of enlightenment' and 'wondered'. The words 'learn', 'learning' and 'learned' pepper the five narratives.
- When - I have highlighted in blue anything which has a chronological overtone like a date, a period of time, an era or moment in history
- Where - I have highlighted in olive words that signify a location, context or place. Some of these are physical spaces, others virtual contexts and some are geographical references.
- Why - I have highlighted in violet, the reasons why I did something or something occurred.

## Analysis

On completing the re-reading of the IMs (appendices 2-6; appendix 1 is left as a raw artefact) and counting up the instances of each highlight occurring, it is interesting that the following data are returned:

| Highlight | Instances |
|-----------|-----------|
|           | 83        |
|           | 66        |
|           | 24        |
|           | 18        |
|           | 0         |

I was surprised when I completed this exercise that the rank order that was produced followed exactly the order in which I wrote down the questions in the tutorial with Glynn. It suggests that people had a significant impact on my professional learning - in educational technology terms, they were pedagogical agents. Learning appears to be nearly three times more frequent a thought than the times or places about which I wrote.

This also suggests that I was not at all thinking of the reasons why I did something or conscious of why it occurred. I do not appear to attribute any causality in the IMs, other than need. Given that I had already decided to explore the IMs by the themes of the emerging framework, it is convenient that the next section begins with an analysis of what each IM evinced about 'need'. Most striking is that the reflections in section 4.1 (a-e@t<sub>1</sub>) are much more conscious of the impact of N-ness, which may be precisely because they are written at more like t<sub>1.5</sub> when the framework was embedding in my mind. This analysis, which I hitherto alluded to as a-e@t<sub>2</sub>, might be more reasonably described as a-e@t<sub>3</sub>. In other words a third stage removed from the incidents themselves with the reflections at 4.1 much more theoretically-imbued than I wanted to believe.

### ***4.3 Stage 3 Analysis using the four stage theoretical schema of auto/pedagogy (a-e@t<sub>3</sub>)***

In this section, it is my intention to explore the IMs thematically against the framework that has become the object of the research as well as one of its tools. Each 'N' is treated as a concept and illustrations from each are used to exemplify how the framework ties together horizontally as well as vertically.

On reviewing these reflections, in the latter stages of the project, I can see how they have been formed differently over time. Most notably the latter ones, from IM3, are more sophisticated. Self-critically, I can see they are better written, more analytical and make better use of the literature consulted. I infer that this is because my self-conscious learning has improved over the duration of this study. That in itself is perhaps an important finding of the study. If a self spends time in auto/pedagogic enterprises, the quality of their learning improves - this seems to be so in my case. I wonder if this is the same as the old adage about cynical and resistant teachers: "25 years of experience, or one year of experienced recycled 25 times." It is for the simple reason of showing development over time that I have left IM1 and IM2 in their more 'raw' forms.

Others will judge if this ipsative assessment of my own learning is accurate.

The reason why these writings are described as a-e@t<sub>3</sub> is because the reflexive process is now two stages removed from the original incidents. The work from here on represents a meta-level of analysis insofar as it was conducted outside the original research objects, just as suggested in the discussion of phenomenological approaches to a cube (see chapter 3).



#### 4.3.1: Analytical Reflection on IMs Against the Concept 'Need'

The first 'N' in the emerging framework stands for 'need'. In this piece of writing, I intend to meta-reflect on my 'needs' in each of the five illustrative moments. In IM1, there was the very immediate 'need' I had created for myself by answering "yes" to the Headmaster's question and that was to learn to use a computer. There is an impelling logic behind the presence of 'need' in the framework which connects back to anthropological, psychological or emotional needs. This is different, in the context of technology, where the 'need' to improve soft or hardware and processes has led to the frequent use of the word 'iteration'. New iterations always derive from the need to fix things that are wrong with the previous instance - I saw this frequently while the TTRB was being built.

In the domain of professional learning, it could be argued that each new role that a teacher takes on in their career is a new iteration of their existing skill set. For example, although I no longer teach children directly, many of the skills I acquired in those settings, at earlier stages in my career, prove invaluable now when working with teachers in training or in-service and also when working with LA officers or members.

A teacher's need to learn something is, I would suggest, dependent on their motivations as a professional but also on more human, may be material or even spiritual considerations. It may spring from their values or a vision they have for themselves or the children they have in their care. Dadds and Hart (2001) report a whole variety of such reasons. In the context of this study what began with a response to a need to learn to use a computer properly - as a result of a critical incident now recorded as an IM - could be said to have led to an ongoing professional learning *modus operandi*.

Reflecting on my reasons for wanting to move schools in 1989, inclines me to suggest that there was a personal need to prove myself as a professional. Reflecting on this in the light of Maslow's hierarchy of needs would suggest that my motivation had something to do with 'esteem needs' (see. e.g. Maslow, 1943). Whilst I believe I needed more money and a hike in career, that is probably not true – the family was surviving where we were (in accordance with Maslow's 'physiological' and 'social' needs see e.g. Maslow *ibid*). 'Achievement motivation' and 'ambition' had been driving forces in my decision to apply in the first place.

Reflections on the 'Can You Use a Computer?' incident, written up as IM1, indicate that I was aware of the challenge I had set myself inadvertently by making what appears now to be, at the very least, an impetuous claim to computer proficiency. Viewed deontologically this claim could be seen as mendacious. Viewing it ethically '*a posteriori*', in keeping with the epistemological method of the study, it can be evaluated as an act from which great happiness was subsequently derived<sup>63</sup>. It certainly triggered a number of events, themselves based around needs and motivations.

Above all I needed access to a computer, in order to make any progress with my self-paced learning. I had seen the potential of word-processing and was aware of the growing uptake in schools. Technology was becoming ubiquitous across society and some schools had embraced it as both an administrative and learning tool. I was pretty sure that I would be unlikely to get funding for out of school learning. I was also clear, in any case, that beginning a new role, would require me to focus on the day job in order to be seen to be making a difference. Thus I

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<sup>63</sup> It could be evaluated as an act of moral rectitude when measured against John Stuart Mill's utilitarian 'hedonic calculus' (see. Mill, 1996)

needed personal access to a computer on which I could practice at home and deliver outputs and outcomes in the context of my role.

I also recognised the need to have a task that would galvanise my learning – I suppose I knew this of myself already as a professional learner. For example, in my first post I had produced and directed three school productions and had learned how to operate a 'high tech' sound system which was loaned to that school by *Samuelson Communications* – a major film production and events company. They agreed to leave the equipment in school if only myself and Charlie Beddow<sup>64</sup>, a year 10 pupil, had exclusive access to the sound desk. I figured that if I could get my head round that level of technology with all its radio microphone and digital sampler capacity, I could learn how to use a PC.

"While we may each perceive information through different senses, we ultimately learn by doing. First we watch and listen to others, then we try doing things on our own. This sparks interest and motivation and generates the motivation for self-discovery." (Conner et. al., 1996 p. 14)

Access to the PC was achieved by persuading the head that I needed to re-do the schemes of work. In order to re-work the schemes of work I needed a PC so that I could write, edit and amend the documents efficiently. The first PC I had was a double disk drive IBM PS2 compatible machine supplied by Nimbus. On one floppy disk (3½" Double Density) were the operating system and programs. The other disk was where files were saved that had been created from the programs on the first disk. I learned quickly, that there was a necessary sequence through which one had to pass to ensure that time was not lost recovering previous work. I also learned quickly the need to create filename conventions as the number of files that I created grew rapidly and would have become uncontrollable. Furthermore I had to learn to create conventions that rendered unique filenames with just eight characters, a dot and three

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<sup>64</sup> Charlie was the son of Charles Beddow, one of Samuelson's UK directors and – happily – a pupil at the school.

letter file type. Reflecting on this now, it is clear that I was, perhaps even before Lave and Wenger (2008) or Wenger et. al. (2010) had defined the phenomenon, participating legitimately at the periphery of the global technology community. It would be inappropriate to ascribe the notion of a community of practice to the loose collection of professionals 'struggling' with learning a new syntax, ways of working, routines and practices and so on, but I was learning around the edges of such a cadre. Reflecting back I recognise now the essential skills and, knowledge I was acquiring even if at the time it was going on outside my consciousness.

At that time professional and practical needs drove the learning. If I didn't save work carefully under my own conventions, I would lose it or waste time searching through files to 'see if I had the right one'. As the number, type and range of my files increased, I learned about storage capacity and recognised the need to keep separate disks for separate bits of work. It was as though I was my own pedagogical agent enabling me to cross my own 'zone of proximal development' (see Vygotsky, 1954). Occasionally, as can be seen in appendix 2, some pedagogical agents like Simon Stanford would help with this process. These reflections are interesting in the light of the quotation from Glaser:

“Effective learners are sensitive to their own learning styles. They capitalize on their strengths and compensate for their weaknesses. They are able to use all styles appropriately. Program designers and facilitators can also help their participants by recognizing learning styles in the preparation and delivery of the learning process.”  
(Glaser, 2002 p. 13)

With the benefit of hindsight, and a more self-conscious approach to professional learning at the time, I suspect I might have been more meticulous in keeping records of things like my departmental requisitions which shifted in about 1991 from a formulaic maintenance and development approach to budgeting to a much more strategic approach to resource management, where I recognised that cost-effectiveness could be achieved by buying disks and paper over and above text books and sugar paper. In keeping with the epistemological method of this study,

there was a clear dialogic going on at this time between me as the novice and people like Simon Stanford - even the head teacher himself who volunteered some aspects of his expertise and experience - , my sister-in-law, herself an IT trainer, and her husband both of whom were more expert than me.

The second illustrative moment also points to an important need at the interlocution of my learning and technology. I needed to learn and understand how to program in html in order to keep pace with the expansion of RE-Net. Honesty dictates that I admit to wanting to keep up with, if not ahead of, Bob. I was quite into hierarchy then. It became necessary also to learn to be able to manipulate images so that pages could be decorated with graphics which reinforced the messages we wished to communicate textually. Early desktop publishing had allowed me to resize graphics using built-in crop tools. Working in html made it necessary to set file and placeholder sizes in pixel widths or page-width percentages. Skills that had been developed around data and file management were also honed in this context as the specificity of programming conventions meant that a missing 'dot' could cause a whole page to crash. Some of this was learned by trial and error. Some, by the experts I consulted and, some, from the manual I bought for Bob to use. In noting this, I am indicating the different learning strategies adopted and in so-doing acknowledge that the critical factor in the selection of the most appropriate was me.

Mapping the previous paragraph onto the framework set out in Conner et.al. (1996), I can see that I was mixing the method between active learning (Conner et. al., 1996 pp. 16-17) and a more interactive mode - and by this they mean, with a human as the agent of learning (Conner et.al. p. 17). They write,

"Learning requires us to move beyond where we are now. We must move into unfamiliar, often uncomfortable domains. While we're learning we may even feel uneasy. In hindsight we may see the experience as productive." (Conner et. al. *ibid*)

Once I moved to Canterbury, and it was clear that RE-Net could make an ongoing contribution to the professional learning of teachers in training, I was able to access further support and guidance in this new field of activity. The TiTLe Unit at CCCU – Technology in Teaching and Learning – had been established under the direction of Phil Poole, to provide technology support for those who wanted to develop work in online settings. My need to create materials quickly was met by the tools that the TiTLe team were able to provide; tools like *Html Assistant* and *Paint Shop Pro*. A point of noteworthy reflection is pertinent here. At no stage did I avail myself of the many training courses that were available for these software packages. Rather, I continued to use an exploratory and heuristic approach to learn how to use these applications as I found that my learning ‘stuck’ more when I had practised ‘active experimentation’ (Kolb, 2005) rather than ‘reflective observation’ (Kolb, *ibid*). As Conner et. al. note,

"Self-directed and risk-taking learners may forgo this step [learning in classroom contexts] and jump in without even knowing why." (Conner et. al., 1996 p. 17)

All the while, I was applying strategies and techniques developed in the early days of my computing experience as shown in IM1. This I later called *i*learning (see IM5) and for the purposes of this study have identified the phenomenon as auto/pedagogy. Support for the notion can be found in the words of Wenger et. al. (2010):

"We see learning as an integral part of life. Sometimes it demands an effort; sometimes it is not even our goal. But it always involves who we are, what we do, who we seek to connect with, and what we aspire to become." (Wenger et. al., 2010 p.4)

This is further supported by Glaser’s take on experiential learning, when he says, “... all learning has an experiential base.” (Glaser, 2002 p.14)

Looking back this was never more true in my autobiography than in the trip I made to New Zealand which is recorded in IM3 (see also appendix 1):

I have reflected on the comment made by Kit Field (cited in section 4.1.3) frequently and would now say that at that time, travel to ICCE 2002 was entirely justified. Indeed, it would probably have always been necessary since the face to face encounters I had on that trip were crucial to the development of the underlying hypothesis of this study. It was the blend of online and face to face encounters that were so professionally enriching as well as the formal immersion in the discourse of 21<sup>st</sup> Century learning. As can be seen in reflections on the concept of 'network' later in this chapter, this was not about 'legitimate peripheral participation' (Lave and Wenger, 2008), it was full self-conscious active and experiential learning (see Conner et. al's (1996) treatment of Kolb's theory in the context of technologised learning or Glaser's (2002) treatment of adult learning).

A further important point of reflection seems relevant: It is perhaps technology that has driven the need for professional learning on my part but the resultant gains in knowledge, skills and understanding have been achieved through the pedagogic agency of fellow human beings. I needed to find out more about education in China in order to prepare the so-called the 'E-China' bid (see IM3). This led me into a range of inquiry strategies. From these emerged the opportunity to go to New Zealand and then my need to find my way round the country prompted my need to get in touch with other academics – this, in turn, put me in contact with Bill Anderson and Mary Smith whose expertise I learnt from (see e.g. Moore and Anderson, 2003) as they were, and remain, leading experts in distance education<sup>65</sup>.

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<sup>65</sup> Bill and Mary still act as executives of DEANZ, the Distance Education Association of New Zealand (see, [www.deanz.org.nz](http://www.deanz.org.nz))

When I reflect on illustrative moment 4 - the building of the TTRB - and consider what my needs were at that time, the stand out thought was that I needed to know and understand more about the process of knowledge and content management. Glaser notes,

“It is helpful to think of a need as a gap between someone’s (or group’s) current performance and what someone else (or others think that performance should be).”  
(Glaser, 200 p. 2)

Concepts like ‘the semantic web’, ‘meta-tagging’, ‘information ontologies’ and ‘meta-data schemata’ were all new to me. In order to operate as a professional, it seemed necessary for me to get on top of such terminology and understand more about what this meant in practice for the TTRB. This meant working with other human beings for whom such matters were part of their everyday professional discourse. Happily, the three professionals with whom we partnered – Stephen Pickles, Head of Library Services at the Institute of Education, Phil Sheffield, Project Director for the British Education Index and Barbara Sakarya, the TDA-funded ‘E-Librarian’ – were all very willing to induct me into this new world of discovery and opportunity. Never before had I been so acutely aware that the more I began to know, the more I realized I didn’t know.

The last illustrative moment is a little different from the others with reference to ‘need’. In some ways, I had proved to myself all that I needed to personally by the time I began to cast about for a framework for the ideas that were beginning to bubble to the surface. In some ways, the need to be seen to be fulfilling my professional contract i.e. by producing research-based outputs was the principal driver. In one sense I knew I needed to be task-focused sufficient to produce some written outcomes from all the work I was involved in, for the simple reason of being included in the RAE! I was also driven by the need to not lose my intellectual property and wanted to record some of the thinking in a publicly acknowledged format. Practically, I am very glad that



I did because my present employers<sup>66</sup> have adopted the notion *iPD* as a way of re-branding many of their existing resources so that they might become a more attractive purchase possibility for schools and colleges. It was very useful in one professional encounter to be able to refer to the citations of my work on the APSCE network as evidence of the ownership of the original idea. Recognising that I might have hit upon a good idea, I registered the following domain names as evidence of how long ago I was working in this arena, *iprofessionaldevelopment.co.uk*, *iprofessionaldevelopment.org.uk*. As can be seen in figure 24, formal dating of my registration was 29<sup>th</sup> July 2007. I record this as further evidence of the 'esteem needs', identified by Maslow (1943). As such these are quite different from the specific needs spawned by professional challenges described elsewhere in this section. These were much more ego-driven, on reflection.



**Figure 24: Registration of iPD**

<sup>66</sup> This must have been written originally between September 2008 and August 2010, as I moved on from the Pearson Publishing Group at the end of that month.

This short analysis of the concept of 'need', as it relates to each of the illustrative moments, has been very useful for extracting the points of professional learning - though there is a sense in which it is my person that learns first and only then translates the learning on into the professional domains. In most cases the needs have been positive ones, though there are times when a more cynical, selfish or egotistical reason is the motivating factor. In every case, however, there does appear to an element of Maslowian self-actualisation at the heart, though self-awareness dictates that I should acknowledge the critical impetus of the lower order need, 'esteem'.

#### **4.3.2: Analytical Reflection on IMs Against the Concept 'kNowledge'**

The purpose of this piece of work is to reflect on the kNowledge aspects of the illustrative moments that comprise the core objects of the study.

In the first illustrative moment, I have recorded the reality that I had little prior knowledge of computers. I had played with computer games as a student and had been trained on very basic word-processing by a colleague at my first school in Luton. I was also aware of the growing tendency to provide learning opportunities for children through computers but I had no real practical knowledge of how they worked or how they could be used. It was obvious, though, that St. Simon Stock was considerably further advanced in its adoption of technology right across the school and I knew instinctively that I would need to get on the band wagon that was gathering pace. A dialogical reflection on that last observation is relevant. I needed to move from unconscious legitimate peripheral participation (Lave and Wenger, 2008) to formal, structured active experimentation (Kolb, 2005, Conner et. al. 1996).

Further analysis of my use of the term knowledge as one of the components of the framework for this study reveals the insertion of the adverb 'prior' ahead of the term itself. So it is reasonable to assert that I brought forward into this moment a piece of tangential and transferable knowledge and that was the ability to type. Familiarisation with a 'qwerty' keyboard, albeit operated only by the two-finger method, was a good starting point. I also knew that a computer was operated by a series of programs and that data was created, stored and retrieved for editing by the creation of files. I am not able to recall when I learned the difference between a binary operating system and DOS (data operated system), but my memory suggests that it was not long after I started at the school.

I can only have learnt this from Simon Stanford who I acknowledge in the narrative accounts of that period of time. In addition to this, and other, fundamental bits of information, I gathered from him some important building blocks of knowledge which have stayed with me and which have evolved and been enriched over time. Among these are the differences between Read Only Memory (ROM) and Random Access Memory (RAM). Reflecting now on IM1, these terms seem almost archaic and irrelevant, as if they were the property of another epoch. The only people who care about such nuanced differences are those who wish to ensure that their machine has sufficient capability to deliver the core computing functions they need in the execution of their work or other applications.

A further piece of prior knowledge on which I drew regularly at the time is harder to describe. I believe that the discipline of logical argument associated with the study of philosophy was convenient to the new learning context. Frequently I would apply problem-solving logic to the learning of new technologies. For example, I had found the mental arithmetic approaches to the creation of percentages challenging as a child and on into 'O' Level study at school (That which Papert describes as 'Mathophobia' (1993) and about which I wrote in IM1), but I understood the steps through which it was necessary to take a set of numbers and operate them to produce results. Such logic I applied to the acquisition of skills and learned to solve my own problems by thinking through the steps that seemed to be necessary to execute a function. Once I knew some basic commands like <file>, <save>, <print>, etc., in one program, I was able to apply that new knowledge in other contexts. My knowledge base increased daily.

By the time I was setting up and developing RE-Net, I had accumulated considerable technical knowledge pertinent to the domain of computer usage. I was adept at setting up computers,

installing software, connecting peripheral devices like printers and headsets and was able to solve a lot of problems without recourse to technical support. I had learned also to touch type with two fingers on each hand, thereby doubling the speed at which I could enter data – especially useful for creating resources. I knew how to insert images and sound files into presentations or documents, how to search the internet, how to access e-mail and so on. I also knew by this stage that programming was not a mystical science confined to the geniuses of NASA or the Massachusetts Institute of Technology (MIT); it was a relatively straightforward 20<sup>th</sup> Century skill that could be acquired like riding a bike, operating a VHS machine or operating hi-fi. Above all, I had lost my fear of computers. I knew that I could control them not *vice versa* and that they could be made to make my life easier.

To the building of RE-Net version 1.0, therefore, I brought prior knowledge of the subject, basic keyboard and programming skills and the knowledge of where to get help. Reflecting on this, it seems as though my tendency to learn by active experimentation was enabling me to acquire knowledge and skills very fast. I can recall my excitement when writing a piece of html, saving the file, opening the browser, clicking refresh and seeing the results of my programming displayed online. The feat of accurately typing the full url for an image, in order that it displayed correctly was sometimes such a challenge that I forced myself to be very organised about file naming conventions and data storage. Such is the prior knowledge I carry forward now into the maintenance of a range of websites which I maintain professionally, commercially or voluntarily.

### 4.3.3: Analytical Reflection on IMs Against the Concept ‘Network’

“As I noted earlier, many of the new middle jobs will go to people who are great synthesizers – because the more the flattening of the world connects all the knowledge pools together, the more new specialties will be spawned and the more innovation will come from putting these specialties together in new and different combinations.” (Friedman, 2006 p. 458)

The purpose of this piece of writing is to explore the concept ‘network’, one of the four factors of the framework. In so doing it is intended to show that aspects of it, however, sub-consciously, had impacts on my auto/biography and were catalytic in the effect they had on the emergence of my knowledge, skills and understanding. Central to this part of the hypothesis is the contribution, arising from my own participatory behaviours, I made to knowledge generation – I was present in all these events. Heron and Reason (1997) refer to self-consciousness of this phenomenon as the ‘participatory worldview’:

“The participatory worldview allows us as human persons to know that we are part of the whole, rather than separated as mind over and against matter, or placed here in the relatively separate creation of a transcendent god. It allows us to join with fellow humans in collaborative forms of inquiry. It places us back in relation with the living world.” (Heron and Reason, 1997 p. 3)

As the intention is to show the presence and significance of ‘network’ activity as a sub-text that links the theoretically-imbued moments from my autobiography, it seems logical to present this analysis in chronological order. A full explanation of what the term ‘network’ signifies in the context of this study is offered in chapter 2.3.2 and explored below. As an *aide-memoire*, it seems appropriate to summarise it as follows.

A network is a dynamic matrix of inter-connected phenomena linked together in mutually sustaining relationships. Neuro-biologically, the brain is a model for ‘network’.

Technologically the internet is a doubly significant metaphor in this context for ‘network’.

Anthropologically, the phenomenon of ‘social world’ is a metaphor in this context for ‘network’.

Theoretically, the most helpful metaphor discovered in the context of this study is that of ‘rhizome’, discovered in the work of Polsani (2002).

In 1989, I was not at all self-conscious of networks and I was a long way off my meeting with Pithamber Polsani and reading his work. However, I recognised the need to draw down wisdom from those networks that I identified as potentially helpful. In IM1, I allude to the relationship I developed with the head of IT at St. Simon Stock School who was endlessly helpful in training me in skills that I still fall back on from time to time. I attribute to him my knowledge of spreadsheets, databases, anti-virus software, silver bulleting software and the use of simple programs in learning and teaching. It was in his room, that I first began to witness two important phenomena. First, I noticed that it was possible to learn a lot about technology by observing the computing behaviours of the pupils. Indeed, I frequently ‘networked’ with young people and then tried out what I had observed in the relative security of my office - Further evidence of the sequence from personal learning to professional learning. Second, when asked to cover for absent members of his department, I became aware that for the first time in my classroom, there was an object that was much more interesting than me – the monitor. It dawned on me in those networking moments, that there was a potential future for schooling without traditional conceptualisations of the teacher-pupil relationship. Indeed, I had benefited from the inversion of that model in more ways than one. Lave and Wenger (2008) might evaluate this illustrative moment as an example of ‘Legitimate Peripheral Participation’:

“As an aspect of social practice, learning involves the whole person; it implies not only a relation to specific activities, but in relation to social communities – it implies becoming a full participant, a member, a kind of person.” (Lave and Wenger, 2008 p. 53)

Of course, what I was experiencing was a precursor of the internet. Playing with the concept of a rhizomic network, it is possible to argue that the IT Department of St. Simon Stock School was

an exemplar of such a phenomenon. Simon Stanford, the head of department brought to it, knowledge, skills and understanding that he had acquired through his own research and by attendance on a proliferation of training courses in Computing Science and ICT that were around in the middle to late 1980s. His pupils also contributed, from their own, largely games-oriented computing experiences, their own knowledge, skills and understanding. Such knowledge was transferred to anyone interested enough to participate in this knowledge building community. I was such a person. Importantly however, this metaphorical DNA for that network was being replicated in other schools across the globe. From time to time representatives from each local network would meet, interact and add value to each other's network by the free sharing of knowledge, skills, understanding and increasingly information and software. The history of computing shows that this was how the exponential growth in computing science occurred and continues to do so (Standage, 2003, Hodges, 1992, Naughton, 2000). It is how the Open Source (community-developed software) movement continues to flourish today (Friedman 2006).

“... the reason I think community-developed software is also here to stay is that while it may not be sustainable without an economic incentive at some point, as a sheer tool for making breakthroughs and spreading those breakthroughs virally, it has proved to be very powerful. (Friedman, 2006 pp 110- 111)

"Open-source software development is a good example of how communities can use technology to collaborate as well as invent and transform the tools that are available to meet their needs." (Wenger et.al. 2010 p. 19)

There is no evidence to draw on that indicates the phenomenon of young people who had participated in the St. Simon Stock metaphorical human and technological rhizome, going out and participating in other networks, or indeed creating them. With the advent of [www.friendsreunited.co.uk](http://www.friendsreunited.co.uk) or [www.facebook.com](http://www.facebook.com), however, it is possible to find young people from that time who are now participating in contemporary technological social networking. In other words, the DNA of that original rhizome survives in albeit attenuated networking forms. Even if St. Simon Stock were to close down and the whole teaching force re-distribute to other



locations and the pupil community be distributed to other formal learning settings, the DNA would travel with them – Just as when the rhizomes of an iris are dug up and destroyed in one location, its DNA lives on in newly formed rhizomes elsewhere.

"Delueze and Guattari use rhizome, a biological term that refers to a root-like stem emitting roots and usually producing leaves at its apex, as a metaphor for describing social formation in advanced capitalist societies. The internet, with its rapid growth and acceptance worldwide, is emerging as the form of sociality connecting institutions, governments, business, social groups and individuals in an irrevocable bond of interdependency. " (Polsani, 2002, 2 p. 2)

As indicated elsewhere in this thesis, the DNA of the modern internet is network adapters, Cat 6 cabling, rj45 plugs, Ethernet switches, optic fibre cabling and so on. In IM2, I recorded the contribution of Bob Bowie to the development of RE-Net. He participated (and continues to do so) in a range of 'social worlds', one of which is his family from whom he derived the pivotal bit of information we required to make it all work i.e. html. As part of that learning process we both accessed the many online fora, helpsites and emerging 'internetworks', which exploded once 'geeks' had seized control of the contemporary weapons of mass communication. It was his brother, through participation in his own professional networks, who had come across this critical piece of data. Polsani's hypothesis is that 'flow' occurs at the point at which information is both the subject and object of a knowledge generation event.

"The lifeblood of rhizomic network is the information. As the information space is a temporalized space whose basic state is motion, the information is in constant flow. Continuously added, enhanced, transformed, exchanged and altered, the information ceases to be a product to be consumed, instead it is characterized by the fluidity of Flows that are constantly circulated. The nodes of the network are the access points for information flows, and the access point is where information space is revealed in the interface. The Interface Space is the arena of performative actions of individuals and information alike. This Interspace comes into existence only for the duration the node is activated." (Polsani, 2002, 1 p. 2)

It was our participation in and contribution to knowledge creation networks that enabled RE-Net to be born and thus provide unrivalled access to subject teachers of RE in their social world.

Chronologically and epistemologically, IM3 has become the fulcrum for this study. The Asia-Pacific Society for Computers in Education (APSCE) conforms well to the metaphor of a rhizomic network. In many ways it replicates the traditional construct of an academic network. It contains random academics who share 'research interests'. They come from a wide geographic region and are at different stages in their careers. It meets annually, has a peer-reviewed journal as its main vehicle for dissemination and knowledge transfer (*Research and Practice in Technology Enhanced Learning*) and it sponsors research studentships and doctoral symposia. Such things are the replicable DNA of other academic communities and networks – like, for example the British Education Research Association (BERA) or The British Medical Association (BMA).

In 2002, peripheral members of BERA were present at the International Conference on Computers in Education (ICCE2002) (e.g. Gráinne Conole and myself), bringing to this network UK perspectives on e-learning. Similarly, researchers and teachers from the US, China, Japan, Australasia and so on also contributed from their social worlds, networks and professional communities a diverse range of perspectives and insights. Symbolically, the e-mail distribution list for APSCE signifies the reality of the formal network that continues to be born as a result of that coming together in New Zealand. Whilst it would be inappropriate to have a British, or even European 'chapter' of APSCE, it is not surprising that 'off shoots' of APSCE have emerged in countries like Taiwan, China, Malaysia and Japan. The rhizomic nature of these networks means that even if the original 'plant' – APSCE – were to wither and atrophy, there would be a perpetuation of its original purposes and content. Naturally, the 'seeding' of the intellectual capital generated through APSCE and its activities will have distributed knowledge, skills and understanding to pre-existing or newly emerging networks in those places, helping to build the global knowledge base for 21<sup>st</sup> Century learning.

In 2005, I contributed a paper to the International Conference on Computers in Education which took place in Singapore (Blamires and Hughes, 2005). In that paper, I reported on the joining up of four very different components of a new network, formed from representatives of pre-existing and otherwise independent networks. The academic community was represented by myself and Mike Blamires; Phil Sheffield (British Education Index) and Stephen Pickles (London Institute of Education) represented a community of librarians; Paul Charman and Matt Smith represented the commercial sector in educational technology and Marilyn Leask, Matt Foulds and Paul Jenkins represented the civil/public service educational technology policy community. Although what joined us together was the challenge of building an online community of initial teacher educationists, supported by peer-reviewed resources and materials, each group represented very different networks with varying organisational ‘cultures and climates’ (e.g. Adair, 2009)<sup>67</sup>. Reflecting on this experience, it can be seen that we exploited the strengths of each of these inter-connecting networks. It was in the combination of the respective DNA of each pre-existing ‘rhizome’ that the efficacy of the TTRB was forged. Phil’s contribution of semantic ontology complemented Paul’s contribution of assured commercial behaviour, which was embraced by colleagues in the TDA, who drew from Mike and I intelligence about the academic community and those most likely to contribute to this emerging way of generating knowledge for the sector.

It is a fact of history that the third iteration of RE-Net was a direct consequence of my participation in this network. In order to model how other SRNs could benefit from participation in the TTRB, we created a sub-portal for RE-Net and then uploaded all the existing content and materials into the new platform. RE-Net was thus effectively a new rhizome within the over-arching parent ‘plant’. Contractually, I established RE-Net as a separate presence

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<sup>67</sup> There are a number of sources for Adair’s work, the most recent being a revised version of *Effective Leadership* published by Pan in 2009

which means that, even if the TTRB were to be killed off or die, RE-Net could continue independently but using all the same DNA as the original resource network. Leask remains convinced that it is through such 'online communities of practice' (Leask, 2010), that enhancements to teachers' professional learning can be assured:

“...using e-tools such as online collaboration for the management of research projects over distance with co-researchers based in schools or other universities and communicating online through synchronous and asynchronous communication allows large scale research to be undertaken cost-effectively and in a timely manner” (Leask, 2010 p. 7)

A forensic analysis of this gobblet of text, in keeping with Foucault's archaeological methodology, might focus on the words highlighted. Such words occur frequently in the text books of e-learning (See for example, Salmon, 2000; 2002; Kearsley, 2000; Thorne, 2004). They are equally axiomatic in that which Polsani named as 'Network Learning' (Polsani, 2002). Moreover, they were implicit in the four 'i's, identified in the model for teachers' CPD, I wrote about in IM5 (see appendix 6). It is worth comparing this with some words of Friedman,

"I have found that using the simple notion of flatness to describe how more people can plug, play, compete, connect and collaborate with more equal power than before - which is what is happening in the world - really helps people who are trying to understand the essential impact of all the technological changes coming together today." (Friedman, 2006 p. x)

In section 2.3.2, I pointed to the importance of constructivism as an under-pinning pedagogy for technology-enabled learning. Conner et.al. note,

“The constructivist model comes from several contemporary cognitive theorists who began questioning the benefit of cognitive instruction for unknown information and knowledge. They adopted a different way to look at learning and understanding knowledge, Constructivists assert that knowledge is what we make of it. Without minds there would be no knowledge – it's a function of how we create meaning from our experience.” (Conner et.al., 1996 p. 32).

This model of learning requires at least two participating selves, the pupil and its teacher. That encounter puts together two selves who bring to it 'luggage' from each of the networks in which

they participate: family, friends, commercial, school, neighbourhood and so on – for ease I shall refer to these from now on as ‘domestic’ networks. Such DNA may or may not influence the nature, style or content of the knowledge generation encounter or ‘learning episode’. It will certainly affect, however, the behaviours therein and the perspective from which each participant views the encounter. This important phenomenological insight is clearly articulated by Natanson (1970) and Sokolowski (2000).

It is also the case that a learner may return to her/his ‘domestic’ networks affected by the learning episode and may transfer new knowledge acquired or distribute cognition to them, thus adding value to each network’s own metaphorical genetic make up. In the information sphere (Polsani, 2002), therefore, participatory activity which causes information to ‘flow’, also causes networks to learn.

### **Reflective analysis.**

In some earlier work for this thesis, I attempted to describe an optimal ‘place’ where technology, self and epistemology interlock in the service of knowledge generation. I produced a Venn Diagram and described the space at the interlocation of the three domains as the Zone of Optimal Auto/Pedagogy (ZOAP). The notion of over-lapping domains and zones remains relevant to the study. There are frequent references made above to the networks contributing to the generation and development of my knowledge, skills and understanding. Some of these are human, some technological, some formal and many informal. Wenger et. al (2010) have come to describe these networks as ‘Digital Habitats’. Polsani argues that there is no distinction to be made between a human and a technological network, they are one and the same, since technology is the outcome of human thought processes and, in turn, technology enables and empowers thought. For some, and I include myself in this, the very act of word-processing is

predicated on 'doing as thinking'. This insight was pre-figured by Conner et.al. (1996 p. 30) who asserted, as seen earlier, that "without minds there would be no knowledge" Conner et.al. *ibid*). Leask (2010) argues that so-called Web 2.0 technologies enable this very activity.

"Online networks which encourage collaboration can deliberately build next practice on the foundation of yesterday's knowledge and incorporate tacit knowledge in the collaborative creation, sharing and testing of new knowledge.

In evaluations of CPD programmes, teachers often cite 'coffee break' conversations as being particularly helpful – these professional conversations are an example of 'tacit' knowledge sharing." (Leask 2010, p. 9)

Two things are noteworthy here. Leask endorses my assertion that in 21<sup>st</sup> Century learning human and technological networks merge and become one and the same thing. Secondly, a conversation is *de facto* not *tacit*. *Tacit* means 'to be silent' and therefore, unless Leask is using the term as an adaptation of Polanyi's notion of 'tacit knowledge being more than we have the capacity to tell' (Polanyi, 1961), what she means is rather 'implicit', 'accidental', 'informal' or spontaneous knowledge transfer. By way of illustration, it was in googling '*tacit*' to find an accurate definition of its meaning from inside the music notation tradition or from some other source, that I stumbled on those who have written about Polanyi's concept of 'tacit' knowledge (e.g. Jha, 1998). The point being, that human or technological networks may possess more information than they can tell, but it is through social interaction (communication), or performance that knowledge is seen or heard to exist. A network simply cannot be silent. 10 seconds in a network hub and switching room will convince anybody of the 'noise' that is necessary to make the internet work. Naughton captures this brilliantly:

"But switch the power on and something amazing happens. The machine comes to life! The disk drive begins to whirl, the screen shows signs of activity, noises emerge from the speakers. Eventually Windows '95 appears, with lots of little icons, ready to be clicked on, ready to go. Somehow, an inert object has been transformed into a powerful machine which can solve complex equations, track huge budgets, find - in seconds - a single word in a haystack of half a million documents, build an index to a 120,000 word doctoral dissertation or do a thousand other things." (Naughton, 2000 p. 13)

Social networking utilities such as facebook, yahoo groups, google groups, VLEs and so on., depend for their existence on the ‘noise’ created by their users. Leask goes on to argue that, “Research indicates that effective lifelong learning for professionals requires access to knowledge, information resources and appropriate learning processes which allow co-construction of new knowledge through working with peers and experts” (Leask 2010, p. 10). I would argue that this is a CPD iteration of that which Grimmitt describes as ‘supplementary co-constructionism’ (see Grimmitt, 2000 chapter 8). It certainly drove the TTRB’s agenda (IM4), and accounts for the *interactive* aspects of IM5. It could be argued that ‘noise’ is a metaphor for the legitimate peripheral participation that is at the heart of a Community of Practice (Lave and Wenger, 2008).

There is, however, divergence between Leask and Wenger in their theoretical perspectives which is noteworthy. Lave and Wenger exhort the community of practice as the locus and gatekeeper of ‘craft’ knowledge (Lave and Wenger 2008). Leask conversely worries that introspection, conservatism and craft exclusivity can lead to the narrowing of foci, the recycling of old or redundant ideas and the maintenance of archaic practices, or at least those that have not been put to the test of rigorous research and development:

“The quality and content of the professional knowledge base underpinning educational practice and teacher education, and the knowledge and training of teacher educators and the ways that knowledge transfer takes place, are taken as unproblematic as though these were magic static ingredients. There are of course many websites and documents giving teaching tips and advice to teachers (few giving advice to teacher educators). However a scrutiny of such advice as often as not reveals a lack of citation of any evidence.” (Leask 2010, p. 6)

So there is an important tension to be maintained between the need to bring practitioners together in some form of human network against the need to stimulate and supplement this network with expertise that derives from wider learning. Web 2.0 technologies can help in this

regard because they can enable formal knowledge generators to transfer that knowledge more quickly and efficiently than in traditional dissemination strategies. Indeed, the development of the network may, of itself, be the locus of further knowledge generation moments.

Of relevance to this study is the location of myself at the heart of each of the overlapping/interlocking networks that have been described in this section. The theoretically-imbued IMs indicate variously how my participation, however peripheral, in recreational, practice, professional and academic networks has been instrumental in the development of this thesis. In order to show this in more detail I have developed a Venn Diagram modelled on the Adair's three-circle model first written about in *Action-Centred Leadership* (Adair, 1973 or 2002). He looked at effectiveness in teams and his use of Venn diagrams was transferred to the domain of leadership education. His model might be presented as that at figure 25.

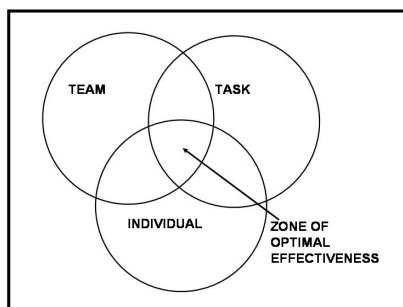


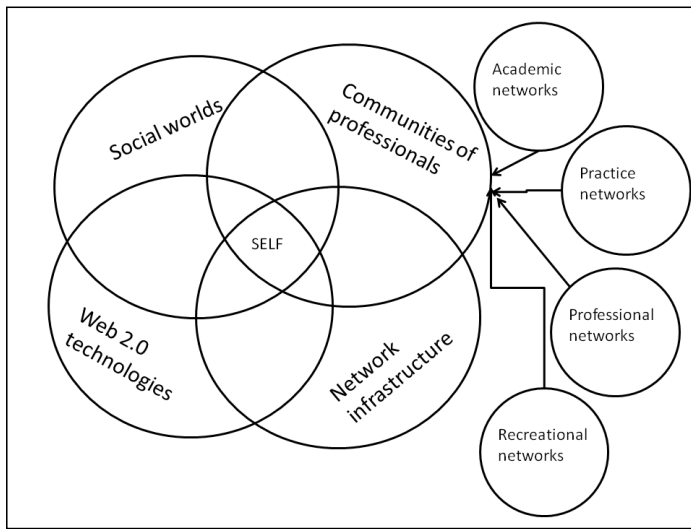
Figure 25: Adair's 'zone of optimal effectiveness'

As a military man, Adair's interest was in how to make effective combat teams ready for action in 'theatre'. His notion was that the sum of the parts was greater than the sum of the individual strengths of any particular member of the team and that all teams were at their most effective when they had a specific task to achieve.

Having acknowledged the provenance of the term, it is necessary to move on since this study is not specifically within the field of educational leadership and management or military strategy. It is, however, about how effective learning is mediated by technology in the learning journeys of many professional educators. The use of a diagram such as this has helped me to structure my reflections since it enables me to indicate the complexity of the challenge and to model the



dynamism of networks and the inter-relatedness of human experience which is so fundamental to an understanding of auto/pedagogy.



**Figure 26: An extending and complex Venn diagram**

As can be seen, my self is at the centre of a multitude or networks, formal and informal learning opportunities and encounters with a vast array of technologies all of which, I would argue, have had an impact on my professional life and the learning which has gone alongside it.

#### 4.3.4: Analytical Reflection on IMs Against the Concept 'New'

“Constructivist approaches work well when we operate with constantly changing information. If education is to become the soul of the new information systems industry, we must learn better ways to deal with the unstructured, the undefined and the unknown.” (Conner et.al., 1996 p. 29)

The last section ended with a description of how networks could operate in the 21<sup>st</sup> Century as constructivist learning hubs. The quotation above is used here because it draws together three important considerations for this study: my professional context as a teacher; my professional interest in technology as an aid to learning and the critical question of knowledge. In short, self, knowledge and (information) technology - the domains in which I was reading, at the outset of this research process.

I stumbled across the quotation when looking for a datum to support another claim I was going to make. But, as has so often been the case with this study, there it was as a dialogic reference point to all that has been building through this chapter in my spiralling and cyclical reflexive activity around the IMs. Glaser is useful here too:

“Praxis is an unusual term. It means that activity is followed by reflection on that activity and that more activity and reflection follow. An experiential learning cycle guarantees praxis. Experiencing and reflecting are built into the process.” (Glaser, 2002 p. 14)

Whilst I am not convinced that this definition of *praxis* fits well with the post-marxian usage in Gutierrez’s work (1971 – see section 2.3), nor that it has a place in corporate organisational theory, it is helpful in the present context because it reminds me of the reflexive processes through which I have been every time I have encountered a new technological challenge in my career.

The fourth concept of the framework ‘New’ ( $N_d$ ), is characterised by the application of new learning in new contexts. More than any other aspect of that which I am increasingly inclined to

describe as auto/pedagogy, 'new-ness' is about the active participation (see Polanyi, 1962) and experimentation (see Kolb, 2005, Glaser, 2002 and Conner et.al. 1996) of a self, in a new context which is however dependent on that which came before – prior learning.

Chronologically reflecting on each IM renders the following series of illustrations of what I mean:

In IM1, I had used a computer, albeit a tape-driven games console and a BBC Basic Computer at Cardinal Newman School sometime in 1988-9. I carried this very basic knowledge and skills (keyboard skills and floppy disk storage skills) into the new learning context focused on the RM Nimbus machine that I acquired.

In IM2, I had all the file data storage and retrieval expertise and experience which I carried forward into the new learning around the development of RE-Net Version 1.0.

In IM3, I had all the meta-cognitive searching skills I had developed over time which I could apply in the context of looking for information for the new learning context around the E-China project.

In IM4, I had all the experience of writing web pages and working in and around databases that was carried forward into the new learning context of meta-data tagging and the creation of keyword schemas.

In IM5, I had the benefit of having produced think pieces before in a range of contexts as well as the specific insight of Fullan (1999) on *i*-ness as well as the emerging *i*-ness of the Mac-world.

Looking back, I am certain that technology was the catalyst for change in each of these career-shifting experiences. I believe this is what Sherry Turkle was referring to when she wrote,

“Technology catalyses changes not only in what we do but in how we think. It changes people’s awareness of themselves, of one another, of their relationship with the world.”  
(Turkle, 1990 p.263)

#### ***4.4: Stage 4 - Analysis by case study 'logic' rules***

Reflections on the illustrative moments, once they had been recorded, resulted in a positive tutorial experience from which emerged the view that these "streams of consciousness" were useful as 'theoretically-imbued instances' which contribute potentially to the development of the theoretical framework. If the model is valid, it is legitimate to propose that these illustrative moments have contributed significantly to the definition and description of the first three aspects of that framework.

The purpose of this section is to explore how they might, inter-textually, interactively and thematically further bolster support for the hypothesis. This would lead then to a series of propositions about the viability of the model as a tool for professional learning in the 21st Century. To that end, I intend to explore in greater detail one of the moments using the emerging framework itself and then collate the outcomes of that process into a conclusion which sets out these potential propositions. In so doing, I intend to show that the eclectic survey of the literature submitted at an earlier stage in the doctoral process provided the foundations for the theoretical model that is currently being explored.

As stated previously, metaphorically, the theoretical framework is like a bean-growers' 'wigwam' of canes intersecting some distance above the ground. Strength is added to this framework by the distance it is embedded in the soil. In my model, each cane represents one of the four strands of literature I consulted at the outset, acknowledging that there is a whole 'subsoil' of literature that remains undisturbed by my digging. The four 'canes' draw to the 'surface' the foundational knowledge on which stands the thesis, in this case the proposed framework. Please note, this is not an error in my logic. In chapter 2, three accounts were given

of the underpinning literature in the interlocking domains of knowledge/epistemology, self and technology. As indicated at the end of chapter 2, a decision was taken to take out a previously-written section on learning but to weave professional learning theory in and through the rest of the text. Figure 20 shows the three domains remaining as named parts of the sub-soil and so my reference here is part historic, thereby showing the development of thought through this process and also the reality that, although hidden, there is a dependency on other contingent discourses.

Strength is further added to the structure by ties at the intersection of the canes as well as the horizontally threaded wires that connect the canes at appropriate points. This section of the study is an attempt to show how the theoretically-imbued illustrative moments provide this thematic though vertically-oriented strengthening of the theoretical framework.

The seminal insight of Polanyi (1962) is that knowledge is brought to life in the experience(s) of human beings and becomes meaningful when the person ‘owns’ and understands the empirical phenomena before them. What I propose to do here is to reflect dialogically on one such phenomenon as a way of evincing the hypothesis that it is in the joining up of the four strands and making explicit the connections between them, through which I grew and developed as a professional.

The chosen illustrative moment in focus will be IM3 – the New Zealand experience. This has been selected for the following reasons:

1. The trip to New Zealand can be evaluated as an *a priori* professional learning experience  
– I was attending a conference with the stated intention of developing further my knowledge, skills and understanding in e-learning. The trip was funded as a cost-effective way of ‘plugging into’ a pre-existing professional community and thereby

gaining access to intellectual capital, global experts and all the contemporary papers in the field.

2. Conscious of the potential power of this as a learning opportunity, I committed to keeping a professional log of learning whilst travelling. Although, I could have done this electronically, I chose to record my thoughts and reflections on paper. A scanned version of this 'journal' is supplied as appendix 1, and is offered as a self-referential artefact that triangulates the "stream of consciousness" account offered in IM3 (appendix 4).
3. This third IM marks a transition in my professional development, since it was at this time that I became aware of the intersection of my prior knowledge, constructionist pedagogies, technologised networks and the impact that these were all having on the development of my professional 'self'. The subsequent IMs are more illustrative of my experimentation of this embryonic framework in structured professional contexts where it can be argued that I was sub-consciously and then self-consciously 'playing' with the framework.

On re-reading my hand-written diary of the New Zealand journey, as part of the dialogical-reflexive process for this study, I was reminded of events that had slipped from my mind but was able to corroborate phenomena that I thought were true but for which I had no tangible evidence, such as the names of some of the academics whose sessions I had attended like Lewis (see 2002).

Excavating the New Zealand experience against the emerging auto/pedagogic framework produces the following outcomes.

## Need

The ‘need’ for professional learning in IM3 relates to the original motivations for working on the so-called ‘E-China’ project. On receiving that project to look after, I became aware of the huge amount of knowledge, skills and understanding I would need to acquire in order to lead on it

successfully. I rationalised that I would need to find out, for example:

- the philosophy and practice of distance education;
- the technological challenges of supporting *x* million concurrent users of an online system within the construct of ‘English as an additional language’;
- how the current Chinese education system operated and the contemporary arrangements for Chinese teacher education and professional development;
- the realities of regionalised technology infrastructure in China;
- the e-moderating<sup>68</sup> capabilities of my colleagues and partners.

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It seemed logical, therefore, to get close to the professional communities developing intellectual capital in distance education, e-learning and inter-cultural education. APSCE – the Asia Society for Computers in Education is an organisation that brings together academics working across all these disciplines. The conference itself, and the 2005 ICCE conference which I subsequently attended in Singapore, gave me access to these people who presented the latest tools for e-learning, published research work on the impacts of programmes delivered through the medium of e-learning, were developing networked communities of practice and also understood the challenges of taking their colleagues away from the comfort zone of a traditional learning space. They also brought me into contact with Chinese academics and thus to the culture of education in the Far East. To explore the phenomenon of education as experienced by learners across Asia would be of tangential interest to this thesis and must therefore be acknowledged but bypassed.

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<sup>68</sup> I have deliberately chosen to use this term here, since I was, at the time, working under the influence of Salmon’s five stage model (2000)



Of greater relevance for the thesis was the very clear understanding among ‘western’ academics<sup>69</sup> of the changes to pedagogy and andragogy being wrought by advances in technology.

At that time, in the evolution of technology in education, research was being presented about:

- the nature of automated pedagogical agents,
- software clients that could facilitate e-learning.
- knowledge generation, acquisition and transfer in e-enabled settings.
- the outcomes of programmes delivered ‘online’

In my professional judgement this was the very community I needed to visit in order to gain the knowledge required to deliver on the E-China initiative.

### **Knowledge**

Elsewhere in this study, I have expressed the opinion that a self can only make progress in learning if it has some prior knowledge on which to draw, including that derived from experience. Developments in pedagogy tend to be evolutionary rather than revolutionary as theorists apply learning derived in one set of experiences to new or emerging contexts (e.g. the various subsets of constructivist pedagogy). I was already aware of the central tenets of e-learning through background reading (e.g. Salmon 2000, 2002; Kearsley 2000; Poole et. al. 1998) and was thus able to identify which communities it would be worth accessing. In looking for support for the E-China project, I was able to apply meta-cognitive principles to the key words inserted into search engines. Moreover, on arrival at the conference, I was able to select appropriately the papers and presentations which were most likely to be of interest or whose

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<sup>69</sup> By this I mean those from the UK, the USA and Canada and from mainland Europe

utility I had evaluated in terms of relevance for the ongoing project. A lack of prior knowledge would have resulted in me arriving at the equivalent of a sweetshop as a sweet-toothed five year old with unlimited money but a limit of three days in which to spend it.

In the informal learning experiences of that trip, it was my prior knowledge of Maori culture that lead me to *Te Papa* and the National Maori Centre at Rotorua and thus to the moments of enlightenment, I experienced in those places. Knowledge of French viticulture was pre-informative of the processes adopted now by the New Zealand wine industry and helped me make sense of an important phenomenon for this study: the re-working of ancient ideas and skills in a new context. I witnessed craft knowledge being handed down from generation to generation with emphases on quality and replication. Knowledge about how to do things, was seamlessly integrated with actual practice of the craft. The architects of the *Marae at Te Papa* brought forward the craft knowledge and skills of their ancestral heritage but brilliantly meshed it with contemporary technical knowledge about materials harvested from sustainable plantations (see IM3, appendix 4).

In light of the above, and in this self-conscious exercise of dialogical reflexivity, it is, perhaps, not a surprise that I elected to attend Polsani's paper on 'knowledge flows' (Polsani, 2002, 1). That he is a philosopher now working on epistemology in e-learning settings was of secondary interest, but what he said, from a strong prior knowledge base of Western Philosophical traditions, validated for me his ideas for the future of knowledge. He introduced me to the concept of 'performative knowledge' and, as such, enabled me to understand that it was this that had led me to New Zealand in the first place. Knowledge, used to perform functions, especially where it allows one to participate in other knowledge generation events, is of far greater use than knowledge held in abstract.

## **Network**

Had I only joined in with the APSCE community as an outcome of that visit, it would have been a worthwhile trip. Returning in 2005, this time as a presenter, and participating in the information exchange that goes hand in hand with academic work of this nature has made it even more valuable and durable as an experience. I formed partnerships with other academics working in similar fields, got plugged into an even broader range of literature than I would have encountered with a more narrow UK focus. In this country, I believe that the JISC and its offshoots largely speaking control the intellectual domain of e-learning and grants for innovation tend to follow only their approved projects – it is the same with BECTA at Primary and Secondary education level. Around the Pacific Rim, however, academics and their students are genuinely designing the future in free, imaginative and creative ways. It is at institutions like Stanford Research International that the frontiers of what is possible are being pushed ever forward. Following the career of people like Jeremy Roschelle whom I met and worked with in Singapore, and his contribution to APSCE will always make participation in this particular network informing and enriching.

## **New**

A key finding of this trip to New Zealand was the concept of rhizomic networks and the way in which the internet replicates itself in lots of smaller networks in commerce, businesses, schools, universities and now even homes. This was the essence of Cisco's advertising campaign at the turn of the century. A subsidiary point was that each internet-enabled device operates as a node on this bigger network and acts metaphorically like the synapses of the brain in the neural networks that cause us to function as human beings.

In February 2003, I presented a paper at the Faculty's Development Day which reported on the outcomes of this study trip. It was in this paper that I suggested to colleagues that we ought to start making better educational use of the mobile 'nodes' we all carried in our pockets.

A second outcome of this process was internal secondment to the role of Director of Learning and Teaching with ICT in the Faculty. During the three year period in which I held that title, I applied many of the insights acquired there in the development of these 'new' ventures:

**Activities that witness the impact of professional learning on my career development**

- The use of smartphones in lesson observation (XDA II project)
- The creation of a Faculty 'technology playground'
- A series of practice-sharing seminars in technology across the Faculty
- The development of the TTRB
- The inception and development of RE-Net
- The creation, validation and delivery of *iteach*
- The creation and validation of an MA in *learning*

#### 4.5 Summative reflections to chapter 4

“I think I may have full meta-cognitive overload! Am becoming increasingly conscious of more fields of study: Meta-cognition, Artificial Intelligence and ‘Agent’ work, among a few” (Extract from New Zealand Journal See Appendix 1. pp. 324-325)

The above quotation signifies my state of mind at the end of the ICCE 2002 conference. It shows that this had been both a profound learning experience and also the start of a transition agenda for the next stage of my career. This would be the 'now what' of reflective practice as identified by Rolfe et. al. (2001) cited in Jasper (2003, p. 103) and conforms to the 'Action-oriented level of reflection' noted there. This is because from that moment on I began to look for ways to embed the insights gained to change practice across the Faculty back at CCCU. I started to apply the lessons learned in strategic and operational contexts, like, for example, the establishment of a Faculty-wide Remote and Mobile Working committee. I reflected that the way to embed change was to institutionalise the operational in much the same way as Fullan (1990) had indicated.

I would argue that my reflections in appendices 2-6 conform to Rolfe et al.'s 'What', given the descriptive nature of the reflections set out in a-e@t<sub>j</sub> in the second stage of my process. That activity helped to confirm, however, that the selected IMs did have similar characteristics and that in a simplistic sense, each of the Ns were, in the due proportions described earlier, present. This was something of a relief and contributed to the growing sense that I might be onto something.

Similarly, it is possible to map the findings of the third stage of my reflexive process to the 'So what' approach adopted by Rolfe et al. in the 'Theory and knowledge building level of reflection' (see Jasper 2003 p. 101). I argue this, because in their model, this is the stage at where the

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theory begins to build. I found that analysing the objects horizontally, as suggested by the method, began to show that there were points of similarity between my IMs. For example, in every case, I had benefited from the intervention of a human pedagogical agent: Simon Stanford, Bob Bowie, Pithamber Polsani, Phil Sheffield and, tangentially, Tim Tatham. Or that, in each case, there had been an unexpected, immediate spin-off: I had learned to compute large numbers of exam percentages, I had developed a website for a family member, I had presented a paper in Singapore (Blamires and Hughes, 2005) and had one delivered in China (Hughes, 2006), I had founded RE-Net on the back of the TTRB technology and I had developed the *iteach* programme.

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Having been through the auto/biographic analysis of those moments, I am now convinced they provide substantial evidence of an emerging framework for professional learning. In every case, I had a demonstrable need to learn something; I was dependent on prior knowledge, if only to kickstart the new learning process, I did learn from pedagogical agents, both human and technologised by engaging in both face-to-face and online collaborative activities and in every case - such as the unexpected ones cited above - I applied newly-acquired learning in different contexts and settings. Theoretically, the resonances between the IMs, even though some of them were separated by a distance of nearly twenty years indicates a coherence and correspondence on which a substantial case could be made.

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That case was set out as an hypothesis in section 2.2x. From the perspective of the 'other side' of the research process I want to now convert hypothesis into a theory buttressed by the data derived from it.

It seems to me, that in my case, profound professional learning occurs when I have a career enhancing, or egotistical need to fulfil. I do not use either term in the pejorative sense in which they could be interpreted; rather they are coined with the degree of specificity that might have been afforded to them by Maslow (1943) or Freud (see Blum, 2003).

In keeping with the theoretical framework, I seem to make profound learning gains when I draw on prior knowledge, gleaned from active experimentation with or through already available technologies or mediated by the "words and works of others" (Kirkham, 2003). In the IMs, I find much evidence that points to my capacity to make connections, see similarities, transfer meaning, understanding or skills or to draw in insights and information from apparently disparate fields. The synergy of finding another philosopher, Pithamber Polsani, at ICCE 2002, is a potent example of  $N_2$  in action.

There is no surprise that a common theme in each of the IMs is the presence of technology as both the catalyst and facilitator of learning. I want to argue now that computers can act as independent pedagogical agents. This, I have come to see, happens in two ways. First, and in keeping with the theoretical framework, they provide the point of information flow across the world's vast 'network of networks'. This was what Polsani meant by 'Network Learning' (Polsani, 2002, 2). Mary Smith's students in Fiji (see appendix 4) could not have been on her education programme without their 'node on the beach'. Second, though whispered through the IMs, rather than in the foreground of my auto/biographic activity, they also provide to the user their own instrumentalism through 'pop-ups', inline help, replicated functionality and programmed 'tips'. The very fact of 'dialoguing' <<OK>> is an invitation to the user to participate in a decision-making process, which is, at the very least, a 'pause for thought'. If the

learner does not ask of themselves, at that point, "I wonder what if...", they run the risk of abrogating responsibility to the 'ghost in the machine' (Ryle, 2009).

I would posit that their agency is extended by the expertise of a pedagogically well-informed programmer. The problem with 'instructional design', VLEs, and the learning technologists that I came across during the twenty years of active participation in this thought experiment was that they were not experts in facilitating learning. Nice powerpoints, whizzy multimedia productions and the menu-driven linkages to online repositories of pdfs or word documents that pass for 'virtual' learning environments, more often than not, fail to benefit from supplementary pedagogical/andragogical co-constructionist methodologies and end up unused or obsolete. This insight was emerging as we were building the *iteach* learning platform such that all the external evidence seems to point to effective agency in the materials and activities we wrote.

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Dialogically and reflexively, what emerges from a chronological reading of the IMs is a feeling that they could be arrayed as a series of linked concentric, spiralling circles. They follow on,

one from the other, because in each new instance, I was building from earlier profound learning experiences. I will accept that my interpretations of what happened in each has been enhanced with the benefit of hindsight and the structured and systematic exploration to tease out meaning

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but I stand by the assertion, made at the beginning of this paragraph, that there is a sequence which is framed by the emergence of each new technology but is also the product of the gradual construction of my knowledge, skills and understanding. I was more or less ready to learn to use a computer because I could type, I was ready to code html pages because I understood the basics of programming. I was ready to explore pedagogical agency because I had accumulated considerable experience in making learning materials available across web-based platforms. I was ready to explore meta-data because I knew about the importance of tagging web pages so

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that they turned up in keyword searches. I knew the power of *i*-ness because I had seen what an *ipod* could do. I also knew from my reading of Bloom (1953) and Kolb (1984) that nothing I had learned would stay fixed if I did not try it out in new and different contexts.

To garner evidential support for this short journey into theorising about profound professional learning derived from the research process, I offer now a summary of IM3. Reflections on the New Zealand experience, amplified by a re-reading of the journal lead me to the following assertions:

This was a profound professional learning experience because:

1. I had a real need to get 'up to speed' with e-learning, distance education, appropriate education for different cultural settings and needed to immerse myself in the relevant discourses. [Arguably N<sub>1</sub>]
2. I had to make use of my prior knowledge, skills and understanding to access an appropriate and cost-effective learning experience. [Arguably N<sub>2</sub>]
3. I was able to participate in a professional learning community (one interpretation of network) which drew from the widest and most diverse group of academics one could muster in one place globally, leading to the enrichment of my own personal knowledge, skills and understanding. [Arguably N<sub>3</sub>]
4. I was able to take the insights and wisdom acquired through this experience and apply them in new settings. [Arguably N<sub>4</sub>]

On page 334 of appendix 1, I present a hand-drawn diagram I created about the process for managing e-learning programmes in Higher Education. I did this in Takapuna on one night of the conference. Iteratively, I digitised this on return to the UK (see Appendix 1, p. 335) and

used it frequently in the work I undertook on behalf of the Faculty at CCCU. On p. 336 of Appendix 1, I present a hand-written list of my key learning from the trip which I had forgotten about. I would argue now that every one of those items was 'rolled out' in the work I undertook over the next six years.

On reflection, I want to argue that I learned several things on that trip which catalysed my efforts and prompted such work. Reading from the top, I learned that:

1. ICT developments in school-based settings are most successful when support for the hardware, software and infrastructure is wrapped up in one managed service.  
Reflexively, I would argue now that the 'Building Schools for the Future' programme between 2007 and 2011 was a missed opportunity to build one-stop solutions for schools' ICT needs.
2. 'Problem-based' teaching, in the correct context, could lead to significant learning gains and even profound learning. My own experience at ICCE 2002 was a significant immersion in solutions-focused collaborative learning [my later attenuation of the descriptor for this type of pedagogic activity]. Reflexively, now, I would argue that this is 'true' but faces, in the UK, the real pressure coming from centrist policy-makers seeking to return to the didactic methods eschewed by the profession about thirty years ago.
3. 'Learning technologies' is a more helpful descriptor of the range of devices and strategies that were becoming available around 2002 to the professional learning community.
4. Web-based groups could be powerful agents for learning in literally global settings - the technology existed then to join academics up and, ten years on, is gradually being adopted.

5. A mixed-economy of pedagogical agents is necessary for a truly profound learning experience: I like my alliterative list of principles, paper, portals, peers, personal tutors as it makes the point that no one method or strategy is sufficient.
6. There was utility in setting up a one-day show where, for example, colleagues could explore hard and software, meet technicians and seek wisdom and expertise from them and also examine learning and teaching strategies in a non-threatening and comfortable environment.
7. That, in other parts of the world, a semester-based system for organising the calendar in universities was proving productive as education moved into the 21st Century
8. It was considered appropriate, to put a sign on the door of an academic's office saying, "I'm teaching my online class", as a defence against administrators and bureaucrats from the old world who consider that teaching can only take place in a formal classroom setting.

It is this last point that had the most lasting effect on me and became a central tenet of all that we did on the *iteach* programme. A truly profound moment of learning which I acted on in a spirit of true dialogic, reflexive *orthopraxy*.

In a paper (2008) entitled 'Description of Methodology', which I put together to clarify to the team how I was to make sense of the research objects, I wrote that "the final stage of the research process will be therefore the analysis of the five IMs to explore their:

- Coherence as a set of signifiers,
- Patterns of similarity and difference,
- Signification of underlying and enduring logic and,
- Likelihood of replication in other contexts, settings or with other people."

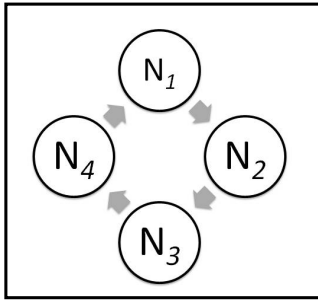
This conclusion to chapter 4 is an attempt to do just that. The conclusions set out in chapter 5 are over-arching conclusions to the whole study and seek to point up ways forward for further research and development, practitioner adoption and to make the case for an original contribution to the field. It should be noted that with three further years' study, the process is inevitably different from that conceptualised above, as an outcome of the extensive impact on my thinking caused by engagement in the process. Here is a short reflection I wrote in about 2009 which evidences this (as in the paragraphs above, I have added into this latest edition, the coding schema that has evolved out of the on-going developmental work).

IM3 seems to present signifiers of each of the four confluent strands of literature. It shows clearly similarities with the first two IM's where there was demonstrable need to acquire knowledge, skills and understanding ( $N_1$ ) and the exploitation of prior knowledge ( $N_2$ ). It also signifies an underlying logic as it fits the theoretical framework perfectly, evincing all the key characteristics. Furthermore, the artefacts presented in appendix 1 (pp. 334-336) show clearly the launch pad for future professional work where I was embedding the findings of this professional learning journey in new settings and contexts. Above all, the impact on my professional and personal self was incalculable. If learning is change...

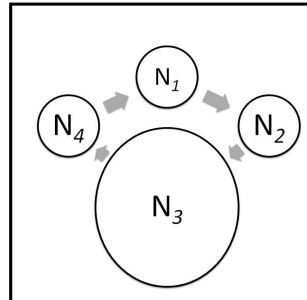
Analytically, reflecting on IM3 now (and in the light of all that has been learned) leads me to attenuate the output accordingly.

Of greatest note is that the significance, relevance and evidence of  $N_3$  (in this IM) outweighs that of  $N_1$ ,  $N_2$  and  $N_4$ . This raises the question of the proportionality of the framework. Far from

being the rigid structure that I drew out at the end of chapter 3 with each factor in equal measure, I have to acknowledge now that the framework needs to be seen more loosely, flexibly and proportionately. A latterly-emerging finding (in metaphorical terms) is of the 'elasticity' of the framework which stretches, reshapes, comes and goes according to the degree of N-ness evinced in each IM. Thus a pictorial representation of IM3 might look more like that at figure 28, if figure 27 is an hypothetical IM where the Ns were in equal proportions:

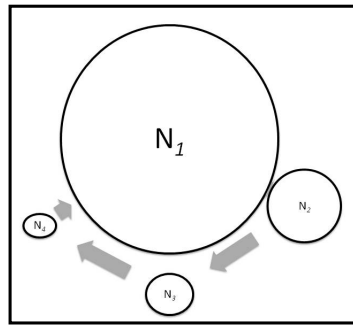


**Figure 27: Ns in equal proportion**



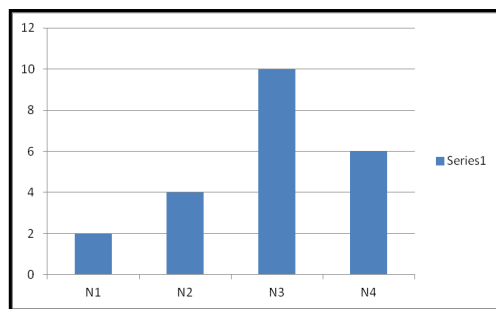
**Figure 28: N<sub>3</sub> Dominant**

This latter insight need not diminish the potential power of the framework, indeed it may add further strength. I would argue now that in IM1 N<sub>1</sub> is pre-dominant, in the strictest sense of the word and that N<sub>4</sub> was only of minimal significance and relevance since it was only in experimental contexts (i.e. the sanctuary of my home or office) that I was attempting to apply newly-acquired knowledge, skills or understanding in new contexts. (see figure 29 below).



**Figure 29:  $N_1$  Dominant**

What should be noted is the cyclical relationship of the  $N$ s in each of these diagrams. This is to represent the dynamic interplay between each in every IM, even if, as is now being said, the extent to which each  $N$  is relevant and significant in each instance changes. Were this to be quantified - and I have a reservation about so-doing in keeping with the non-positivist approach adopted by this study - in two-dimensional, flat, linear, graphical terms, it might be possible to posit  $N$ -ness in this way:

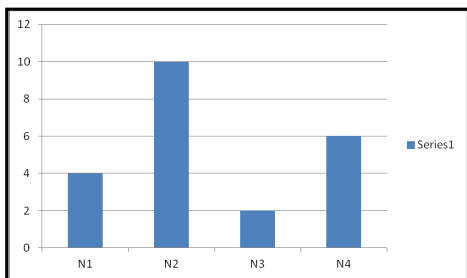


**Figure 30: The proportions of  $N$  in IM3**

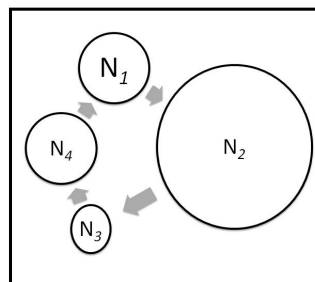
The graph in figure 30 is the outcome of a more numerical quantification of the degree to which each  $N$  was relevant and significant in IM3. I think this is because I was self-conscious that this was an opportunity to 'network'. Inevitably, the degree of  $N_2$ -ness is proportionately smaller simply because, I had less need to use prior knowledge than I did to network. It is important to

take from my theorising about the proportionality of the framework, that I am not saying that there is a hierarchy among the Ns. I am simply noticing that within an elastic framework of this sort, there are times when one factor will be present in greater proportion than another. This is a direct finding from the research since, at the outset, I expected them to be there in equal measure.

To explore this further, a similar chart for IM5 would have more or less the same levels of  $N_1$ -ness, higher levels of  $N_2$ -ness, lower levels of  $N_3$ -ness and highest levels of  $N_4$ -ness because, at that moment in time (c. 2006), I was really trying to apply new learning in lots of different contexts, especially the new ones I was creating. It was at that point in time, that I was, in career terms, behaving most like an academic, in attempting to generate new knowledge in a self-conscious way. Applying the same logic to IM2 would produce a chart that looked like that at figure 31, which in pictorial form would look more like that at figure 32:



**Figure 31:  $N_2$  Dominant**



**Figure 32:  $N_2$  Dominant (Chart)**

This is because the need I had to create RE-Net was a response to an intra-professional situation - the struggle I had to keep year 10 boys interested in RE GCSE. I had to use extensively my already-acquired IT knowledge, skills and understanding in order to learn to build web pages and this required me to learn the new skill of coding html. The reason for  $N_3$  being the smallest N factor in this IM is the fact that I had one ally in this process - Bob Bowie - as no-one else had started to code pages at the school and the internet was not the vast inter-connected library of

libraries with ready access to real, virtual or educational networks that exist today. A small note on N<sub>r</sub>-ness is relevant here. Everything we did at that time was experimental. Each day I would hear myself saying, "Wow, I can't believe I just did that... I wonder what would happen if I tried this again here... Oh, wow, that's worked too." A simple illustration follows.

Around that time, as a favour to a family member, I wrote a website for their business. I wanted to reflect the different colours of the product they were selling. I wondered how I could show this in the text of the pages so I guessed at and added an html markup `<font color = "blue">blue</>` into the code and to my astonishment (sense of awe, wonder, magic, echoes of Naughton, 2000), when I refreshed the page the selected text was indeed blue. I set about applying this new-found knowledge everywhere in the text a colour was indicated, also applying the coders' key skill at the time, key strokes `<ctrl, c>` and `<ctrl, v>`.

A further point to be made here is that the underpinning theoretical framework presented here was the outcome of my reflexive processes and existed in an overtly-unarticulated form, that is in my imagination. Now it exists in writing and in diagrammatic form and is thus becoming more publicly accessible but it remains theoretical and abstract as opposed to concrete and realisable. Nor is it possible to ascribe to it at this stage any more significance than the research objects warrant. What they warrant is a way of constructing an approach to exploring a pre-existing moment of potential significance. Someone else might evaluate a critical incident from their own learning journey against the framework asking if there was any evidence of need driving learning, prior knowledge facilitating engagement with a wealth of resources, participation in relevant communities of professionalism or the application of new insights in similar or totally different contexts. In that sense, they might begin to structure their reflections around the Ns, as I have done.



Alternatively, someone buying into the concept might start to design learning programmes around the framework. They might structure formal episodes to meet identified needs, build on prior experiences or knowledge, provide access to appropriate networks or insist that learning was tried out in new or different contexts. We did this with *iteach*, insisting that the chemists used easily accessible household products, to design and build experiments that children could 'do at home'.

Having played now reflexively with the proportionality of the framework, I have developing confidence about its rectitude and relevance. It does appear as though there is coherence in the *Ns* as a set of signifiers for some factors that in combination contribute to professional learning in the 21st Century.

Furthermore, the exercise around proportionality above does indicate several patterns of similarity and difference in the *N-ness* of the *IMs*. In each one, I think I have demonstrated conclusively that each is present though I have found latterly that their significance and relevance fluctuated according to the particular context in which I was operating. In *IM4*, *N<sub>3</sub>* would be the most significant since the whole of the *TTRB* project was predicated on the interoperability of human (CCCU, RM Ltd, BEI and Institute of Education, London), virtual and technologised (MySQL, ASP.net) networks.

Moreover, as time passed, and I became more conscious of the emerging framework and those things I needed to do in order to move forward in my own learning optimally, I started to use the framework deliberately. I have given one illustration of this from the *iteach* project above.

More recently, I worked with the development team at Pearson Publishing to migrate the product

suite into a 'programme' which started with a thorough-going needs analysis. Materials would then be provided to those whose 'audits' indicated specific learning needs. Since all of the material was provided as 'downloads', I am able to warrant that we had paid attention to the notion of network, in this case, as a noun. Moreover, many of the materials provided were designed to be used by professionals in analogous learning scenarios. A second example of the conscious operation of the framework is in more recent work undertaken in response to the archiving of the RE-Net website, along with its parent, the TTRB, and its older brothers and sisters, multiverse, Citized, and behaviour4learning. In appendix 5, I point to the creation of video materials for RE-Net and for the TTRB. I also reference this technological activity in vignette 5 (p. 125). The clamour (N<sub>1</sub>) for the re-publication of these materials in September 2011, from colleagues in the religious education HE community was sufficiently strong to prompt me to utilise some pre-existing webspace (N<sub>2</sub>) and host them there, publicise this through the Save RE facebook community (N<sub>3</sub>) and watch now as others use them in their own differentiated settings (N<sub>4</sub>). Reflecting on that last point inclines me to argue that this is a metaphor for the very thing about which I am talking. There will be students of RE, who I do not know and am very likely never to meet who will benefit from my pedagogical agency afforded to them through the medium of the internet. I would argue that if they make the personal commitment to finding my website, downloading the objects, viewing them, and reflecting on what they have learned there and acting on it in their practice, they will have unconsciously engaged in auto/pedagogy.

This, I now argue, signifies an underlying and enduring logic in both the framework and the process. In IM5, even though I now realize that my thinking was muddled, I was edging towards the adoption of a framework for teachers' professional learning in the 21st Century. I was aware that there were some necessary characteristics that would be evident in each

professional learning episode and that, once I had discovered the theory of case study logic (see Yin, 2003 pp.47ff), I was aware that the framework needed to straddle all five IMs. As evidenced above, it does indeed do this:

"An important step in all these replication procedures is the development of a rich theoretical framework. The framework needs to state the conditions under which a particular phenomenon is likely to be found (a literal replication) as well as the conditions when it is not likely to be found (a theoretical replication)" (Yin, 2003 p. 47-48)

Having established the theoretical framework - codified as  $I=N^f$  - and having named the phenomenon auto/pedagogy, I then began to cast about to see if there was a 'likelihood of replication in other contexts, settings or with other people' (see above). This insight I also derived from Yin (2003):

"The theoretical framework later becomes the vehicle for generalizing to new cases, again similar to the role played in cross-experiment designs." (Yin, 2003 p. 48)

This is echoed in the Jasper's description of Borton's 'So what' level of reflection:

"In this way a personal theory about the experience is created that is unique to the individual. He/she may draw on several sources to do this, including their own previous experiences, the knowledge and experience of others and accepted knowledge and theory, such as library sources." (Jasper, 2003 p. 99)

### **A Finding**

The last piece of analysis, which included a review of chapter 2 to check that it was still fit for purpose caused me to identify a missing link in the thesis. It seemed as though I needed more of a wrapper in which might sit my tentative theoretical framework. This was because I had begun to refer to it as a zone of auto/pedagogy even though I had not made the link back to the literary origins of such a concept. Symbolically, in the diagrams above, I have bounded each IM with an image border. In chapter 3, I am explicit about the time boundaries for each of the IMs, but here the point is much more about the internal characteristics, or "essence" (after Moustakas, 1994) of n-ness within each IM, given that a two-dimensional model will only ever represent

part of the picture. Here then I try to articulate what I have found to be more like a 'zone' than a box.

What I have noticed in the IMs is a constantly spiralling, dialogic reflexive process where I willingly tackled new, technological challenges. Self-critically, this means that my theorising from here on in, should lean more towards a noematic phenomenological approach (Husserl, 2001) and away from a straight noetic analysis of the activities of the zone (Gurwitsch, 2010). Clearly, I need now to focus more on the structure of this 'zone' as it emerges more clearly formed from the research, especially if this zone is to be used to 'scaffold' further the professional learning episodes of my self going forward or those of other meaning making practitioners.

In each IM, I seem to have been aware that new technology had created a need for learning in that it had exposed a gap in knowledge, skills or understanding which needed to be closed. In a self-directed way and in every case I did this autonomously by drawing on existing knowledge, and seeking guidance and wisdom from the words and works of others. This had the effect of plugging me into, however peripherally, existing or emerging human or technological networks. At this point, I want to say that networks provide access to pedagogical/andragogical agents. Since the process of learning with technology is an inevitably ceaseless process as each new iteration requires new learning, so I had to apply constantly newly-acquired knowledge, skills and understanding in a whole range of new contexts or learning opportunities. Learning in the zone of auto/pedagogy (ZAP) is therefore personal, autonomous and technologised but it is also utterly dependent on the pedagogical agency of other humans and, in the 21<sup>st</sup> Century, personal computers.

### **The 'Zone' of Auto/Pedagogy**

At various points in the process of editing down the literature review, I noticed that I had quoted authors using the term 'zone' to describe a phenomenon that they were working with. I have referred to Vygotsky and his celebrated term, the Zone of Proximal Development (Vygotsky, 1954 or 1978). In this 'zone', learners are helped across a metaphorical or virtual gap between what they know or can do and that which is as yet beyond their reach. They are helped by an expert or tutor, teacher or pedagogical/andragogical agent [my term] who supplements the process with wisdom, insight or expertise by being close (or proximal) to them in the journey

"It is the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers." (Vygotsky, 1978 p. 86).

Implicit in this notion is the assessment of the learner's capabilities at the outset. Learning is deemed to have occurred when a subsequent assessment has been undertaken and there is evidence that the gap has been closed. At no point does the theoretical framework that is emerging from my research, provide a fixed point of entry, a training needs analysis or an entrance test. In my view, learners determine the point of engagement through their instinctive or visceral response to a need that 'pops up' in their career pathway. Similarly, only they know when learning has been sufficiently profound to enable them to assert that the gap has been closed and they can move on, perhaps to a new zone of auto/pedagogic activity.

Inside the zone, however, there are, according to the findings of my research, some pedagogical agents who, consciously or not, scaffold the learning experience, in keeping with the constructivist theories of Vygotsky (1978). Human agents may model, by example, "how they do it", which may be good enough for the learner. This certainly worked for me, looking back on the agency of the children over whose shoulders I looked (see appendix 2). Computer agents

may scaffold the experience by providing interactive devices that are programmed to lead the learner through the necessary procedures to execute a function accurately. Formal online learning programmes will use all manner of software tools to scaffold the learning experience so that time spent in the 'zone' is, at least, intentionally, purposeful and productive.

Later, I referred to Lewis (2002) and his adoption of this pre-dominant metaphor for e-learning constructs and his play with the idea in relation to knowledge-building environments. I reflected on this in relation to the Maori knowledge-building environments, I observed at Rotorua in New Zealand (see Appendices 1 and 4). Their 'treasure houses' acted as learning zones where the elders would dispense wisdom to their novices - very much the 'apprentice model' of adult learning. Characteristic of this 'zone' is the willingness of the expert tutor to share their wisdom and experience with the learner. Hence, why Lewis refers to the comparable technological communities in 16th Century Cremona, 18th Century Britain, 19th Century France and 1990s 'Silicon Valley'.

"This knowledge construction seems to have taken place in the United Kingdom due to a social community that evolved through coffee houses and clubs. Through face-to-face interaction, mechanisms for the application of scientific facts — coming over many centuries from communities as far apart as China and France — were created and tangible benefits accrued to the whole of society in the United Kingdom, then further afield and eventually worldwide." (Lewis, 2002 p. 7)

Schön (1987) uses the term "*zone*" to describe loci wherein practice may be analysed and investigated. He calls them 'practice-uncertainty, situations of confusion and messiness where you don't know what the problem is' (Schön, 1987 p. 11). In his work, it was the task of the reflective practitioner to investigate these 'zones' with a view to making specific adjustments to their practice in order that it improved. Unpicking the uncertainty, making sense of the confusion and messiness, would, it is argued, bring about change in the class or consulting room.

Where I differ in my approach from that articulated by Schön is in the belief that external help is usually required to make sense of the situation and thus learn from it. Thus I would argue that in a zone of auto/pedagogy, the reflexive professional also seeks pedagogical/andragogical agency from those more expert or experienced - this I would warrant to be true in my case when I take into consideration those whose agency I affirmed earlier. They may also go to the literature to look for insight or wisdom and thus they enter a more dialogic cycle, spiralling continually between the 'situation' (context or concrete experience), the words and works of others and their own interpretive activity. In my zone of auto/pedagogy, it is often the case that connections are made to apparently disparate phenomena such as the lyrics of songs, random other life experiences, incidents with similar characteristics or apparently chance conversations.

This may be serendipity, synergy, or it may be unconscious, blink-type behaviour (Gladwell, 2006), it may even be the outcome of a quasi-spiritual determinism but for me the result is always the same: progress is made in my learning. This is because the "zone" enables me to transfer meaning in and out; it enables me to structure reflections around some concepts in which I have increasing confidence and it also enables me to utilise skills, I have accumulated over twenty years of professional engagement with learning mediated by technology.

The five illustrative moments were selected for the reasons set out in chapter 3 but it is more than possible, serendipitously, sub-consciously or spiritually that they came to mind because they were 'optimal' in my learning journey. I have found through the process of this research that my learning was at its best when all four of the Ns were present in a 'moment' and I was in a particular zone.