# Learning in Liminal Spaces

**John Cuthell, MirandaNet Fellowship**

**Leon Cych, MirandaNet Fellowship**

**Christina Preston, MirandaNet Fellowship**

Key words: Liminality, MirandaMod, unconference, professional learning, digital technologies

## Introduction

The term **'unconference'** is a generic term for a virtual debate between professionals, who are seen as equals regardless of status, culture and nationality. The unconference mode of informal learning has recently been modified by professional educators in a version called a MirandaMod, started in 2007 by members of MirandaNet, a professional organisation founded in 1992. In these events a wide range of education professionals choose a theme for a face-to-face meeting. But others join in across national boundaries, using a range of such digital communications as video conferencing, microblogging and collaborative concept maps. The technologies used – whether laptops, smartphones, desktop computers or Netbooks – enable people to participate from a range of locations. Some lead participants set the tone in five minute talks, usually without presentation software, and further contributions are selected by the chairperson to achieve a balance in participation between teachers, researchers and teacher educators.

 Many of the educators in MirandaNet are taking or have taken higher degrees and are interested in exploring the theories and the pedagogies underpinning teaching practice, so this debate merges with their formal learning. These MirandaMods, therefore, provide an innovative extension to Continuing Professional Development (CPD) where professionals collaborate to manage their own learning agenda. This online and virtual social interaction was first recorded face-to-face in the process of building 'communities of practice' as a means of informal learning (Lave and Wenger 1991).

In Braided Learning theory (Haythornthwaite, 2007: Preston 2008: Preston and Cuthell 2011, in press) MirandaNet Fellows are tracking  informal dynamic knowledge creation in collaborative contexts, as the participants move from textual debate in a conventional mailing list to video conferencing, micro blogging contributions and collaborative concept maps. Fellows see this collaborative technology as creating a liminal space – a term drawn from anthropology that describes a rite of passage, in which a person moves from one state of being to another. In Braided Learning, debaters who make frequent use of this MirandaMod community facility are observed to be transformed in this liminal space by acquiring new knowledge, a new status and a new identity in the community. Our view is that this change is of critical importance if learning is to be successful. Whilst remote and informal learning is

largely is what has been understood about mobile learning, the concept can now be extended to include these informal spaces in which learning takes place – the liminal spaces that those who push the boundaries of digital possibilities now inhabit intellectually (Cuthell, Preston, Kuechel and Cych, 2009).

This paper aims to extend understanding of liminal spaces and their contribution to the Braided Learning process. Evidence from MirandaMods that have involved participants from the United Kingdom, Europe, West Africa, the United States and Australasia is used to estimate the value of such informal learning for professionals. The qualitative and quantitative research tools that record both the numbers involved in the different activities, levels of participation and the extent of the professional knowledge created are identified. The processes an be described as Bricolage (Levi Strauss, 1962), in which people build new knowledge from what is at hand. Some consideration will be given to the long-term impact of building professional knowledge in a range of media that are not subject to conventional peer review. Finally the advantages and disadvantages of informal learning against formal learning will be summarised.

## Transformations in liminal space

The liminal spaces – embedding rites of passage, with people moving from one state of being to another – were three-layered multiverses incorporating a physical space, the virtual space of trance and dream and a visual space of representation: paintings left behind on cave wall; artefacts. Shamans and creatures from Myth entered these spaces, left behind their constraining present and found their identities shifting and changing. They brought back to those unable to cross with them (their communities) messages to guide them in their daily life. The shamanistic ability to shift time, shift place and shift shape linked the grounded earth world with fluid visions to guide their future. So, in the practice of Braided Learning, participants in these MirandaMods are observed to be transformed by acquiring new knowledge, a new status and a new identity in the community. Liminality brings with it a sense of power and possibility that is in part a release from prior constraints (temporal; spatial; personal; professional) and in part a reflection of the autonomy engendered by the de-stratification of existing professional power relationships of learning.

The conventional ecosystem of learning is based on the separation of home, the institution (school, college, university), neighbourhood, work: all of these are bound into a system. This system operates the constraints of age, class, money and expectations, all of which act as gatekeepers for the system.

In contrast, the liminal spaces that we inhabit and within which we work are everywhere, and nowhere.

© Cuthell, Cych & Preston

## Learning as a transformational process

We make meaning through words; we make meaning through the creation and use of artefacts; we make meaning through actions. If the learning process is to be truly transformational then we would expect it to effect a transformation of our psychology, our attitudes and beliefs and our behaviour. In other words, learning should go beyond content acquisition and our acceptance of 'the known' and the status quo and build from cognition, through metacognition to epistemic cognition. In other words, what we say, what we make and use and what we do should all reflect the changes brought about by our learning – whether it is instrumental or communicative (Habermas, 1984).

So, to repeat an earlier point: in the practice of Braided Learning, participants in these MirandaMods are observed to be transformed by acquiring new knowledge, a new status and a new identity in the community. And these liminal spaces are everywhere, and nowhere.

## Using technologies

The term 'digital technologies', also encompasses the mobile technologies movement that aims to chart the new conceptual space that Pachler et al call the 'Mobile Complex' (Pachler, Bachmair, Cook, 2009).

The theory and practice underlying MirandaMods, described as 'Supercharging Streamed Media' (Cych, 2009) brings MirandaNet's interactive Continuous Professional Development to an international audience.

### Supercharging Streamed Media

MirandaMod sessions are filmed for post-production, in order to produce high quality film. It includes people's discussion, embedded PowerPoint Slides synchronised with talking heads, and so on. The sessions are also filmed dynamically, incorporating live streams with both face to face and remote discussions through USTREAM[1]. The MirandaNet team also uses a FlashMeeting[2] Stream to include all the virtual participants in the discussion for reflective workshop sessions that augment the face-to-face ones.

Now FlashMeeting is traditionally a serial video conferencing application where everyone's stream is visible in miniature and people take turns to broadcast out - a diagram of use might look like this:

---

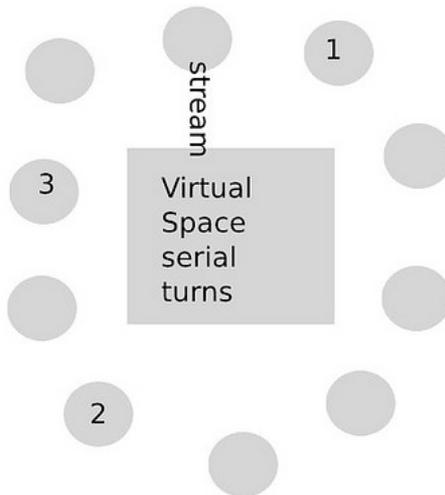[1] http://www.ustream.tv/

[2] FlashMeeting.e2bn.net

**Figure 1: FlashMeeting, a serial video conferencing application**

One person talks at a time and is streamed – other remote viewers observe or queue – and one person can mediate.

It has a range of features built in, like voting and polling, and a text chat channel. But that "serial" model of video transmission or streaming can also be wasteful if you wish to amplify live streaming socially. All that is needed – and it is what people hit upon in the MirandaMod sessions – is to add a Digital Video camera on a tripod to a computer where a group of people are meeting and then show the FlashMeeting on a whiteboard in that room as well. You then immediately magnify the social interactions and make them highly dynamic. So you end up with a modified FlashMeeting not unlike this:
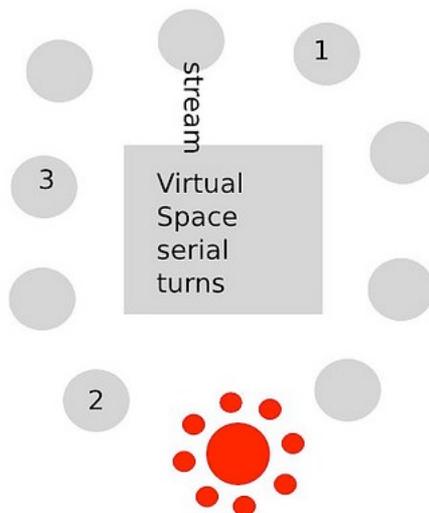


**Figure 2: Magnified dynamic social interactions**

One of the participants is now magnified through the 'many at one' node because the video is a roving camera, not a static one.

The interactions are further augmented by the use of MindMeister, a collaborative mapping tool being use to create and store knowledge created in real time by an expert group (Cych, 2009).

**How do these technologies translate into the Liminal Space?**

If we use the original analogy of the liminal space as being a three-layered cosmos or universe, it encompasses three 'worlds' – the physical world, the non-physical, or virtual, and the visual, or representational. In MirandaMods these become The Physical Space, The Online Space and The Representational Space. Within each of these participants assume different roles and presences, and for many of the participants this is at one and the same time. In other words, within these sessions people assume multiple roles, often in multiple spaces.
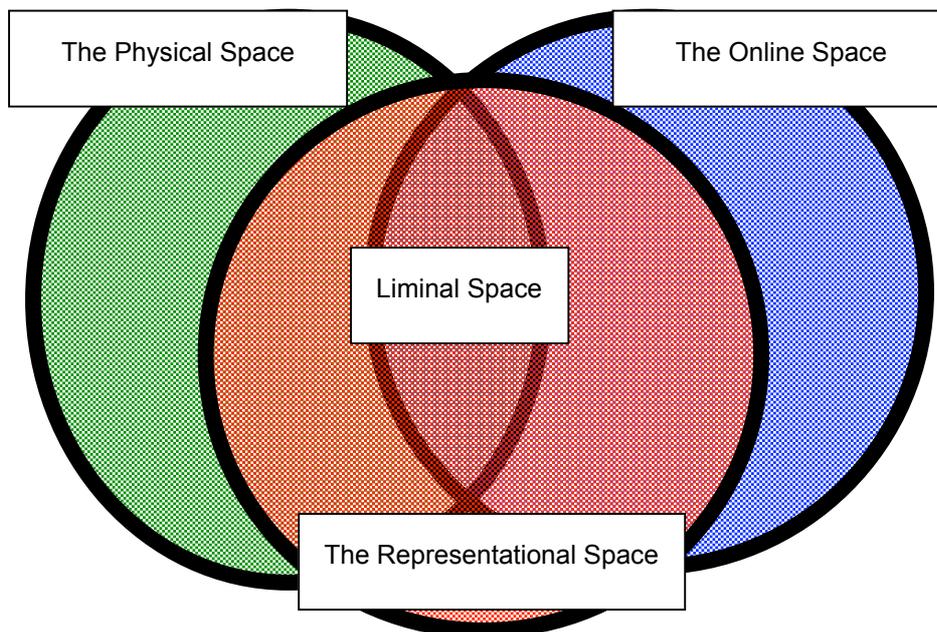
**Liminal Spaces of MirandaMods**



**Figure 3: The Liminal Space**

© Cuthell, Cych & Preston

**In the Physical Space**

There is (usually) a Chairperson, who orchestrates contributions from people in the space, as well as those operating in the Online Space, supported by the FlashMeeting supervisor. The social greeter will have coordinated all those present. The technical crew could consist of the film crew (one camera operator and possibly one sound person); a people director (someone who orchestrates people's movements and utterances and reminds people about the technical kit that is being used); a video and sound mixer; a technician and a remote stream observer providing feedback. These will also be participants in the process. In fact, the majority of participants are involved in the technicalities, as well as contributing and learning.

**In the Online Space**

Those participants in the online space will include connectivity management: this may fall to one person or, better, be distributed, with Tweets being sent out at appropriate opportunities in the discussion. Another participant will be the Mind Map Manager; another, a remote stream observer providing feedback to the technical crew in the physical space. Then there will be participants in a FlashMeeting (or Elluminate, or whatever other platforms may be used). Many of these participants will also be on Twitter or on other social media. An important aspect of the online space is the provision for asynchronous participants, who can access the website that contains links to the wiki, the video streams, the mind map, the chat documents and the replay and transcript of the FlashMeeting session.

**In the Representational Space**

This space is inhabited by participants who may be either synchronous (these may also be operating in both the physical and online spaces) or asynchronous participants: the Mind Map Manager, the map makers and a wider audience (again, both synchronous and asynchronous) that can also include people on Twitter and other social media.

Binding all of these spaces together will be a post-production video and web manager – who may be a single, or collaborative, entity. In this way the event, its processes and the learning will exist in yet another temporal and virtual space for asynchronous use.

**Summary: Roles and Actions in a Liminal Space**

| The Liminal Space consists of: | | |
| --- | --- | --- |
| **The Physical Space** | **The Online Space** | **The Representational Space** |
| Chairperson | Connectivity manager (distributed - someone who tweets out at good opportunities in the discussion) | Mind Map Manager |
| FlashMeeting supervisor | Mind Map Manager | Map makers |
| Social greeter | A remote stream observer feedback person (remote and on site) | Participants |
| Film crew (one camera operator - one sound person) | Participants in FlashMeeting, Elluminate or other platforms | People on Twitter |
| People director (someone who tells people where/where not to stand - what not to say and remind people about the tech) | People on Twitter | People on other social media |
| Video /sound mixer | People on other social media | Asynchronous participants |
| Technician | Asynchronous participants | |
| A remote stream observer feedback person (remote and on site) | | |
| Participants | | |
| A post production video and web manager | | |

# The toolkit

In a perfect world the team producing a MirandaMod would have a complete range of equipment. Our world is less than perfect, and operates with far less than this:

> 1 or 2 good digital cameras with proper light and sound plus proper batteries
> A camera to save to SD card
> A sound mixing desk and radio mikes for everyone, plus PA system
> An always-on good broadband connection
> An on-site control booth

# Skills needed

Operating in a multilayered liminal space requires a complex skill set that changes depending on the participants, the venue, the time available and the equipment.

**For Twitter**

Fast and efficient skills for Tweeting out. These skills include:

Advance agreement of the hashtag (#) with all the active participants. Know the URLs that will be needed and have them in a separate document on your desktop before the broadcast.

Listen to the conversation. Tweet a "Hook" – not just: 'Stream from .... at .... at so and so in 10 minutes': it just becomes routine and boring and the law of diminishing returns kicks in.

Identify the speakers and their backgrounds. For example, when Chris Yapp was talking during BETT11 MirandaMod it was pointed out that he was one of the people behind *Shift Happens*[3] – a presentation about how changes in global trade impact on individual careers – the result was immediate attention and increased engagement from the Twitter community. The conversation on Twitter then moves onto the HashTag, at which point the effect is achieved. That is how it works.

Engage your audience on different channels.

Encourage remote users to respond on Tweets and in the FlashMeeting. You are talking on two channels to different audiences, but you are the one constant, and in that way the reach of the event and community can be maximised.

Have a few Twitter templates ready to send out during the broadcast pre-prepared – just cut and paste into Twitter then click 'Send'. The more people who do this, the better chance there is of getting a wider audience.

**For FlashMeeting**

Always read the FlashMeeting text and talk and respond – the previous strategies hold true in this arena as well as with Twitter. Acknowledging these contributions is important to the face to face participants and those online as it emphasises the global reach of the debate.

NEVER have the videostream and the FlashMeeting up on your desktop at one and the same time. The top window on your browser is active: i.e. you can input data to it. It can also be called the one in focus. You may have a number of windows or tabs open on your browser. One of these will be in focus; the others will not. If you start off a FlashMeeting and then minimize it or open another window or tab it will still continue to broadcast sound. So, if you then bring up the USTREAM video stream that will initially work well. However, two windows, one seen and one not, are fighting for sound, and are

---

[3] http://www.youtube.com/watch?v=ljbI-363A2Q

© Cuthell, Cych & Preston

often not in synch. This is why people think the sound is the fault of the transmission. It's not: two windows are open and one is fighting the other to be IN FOCUS. The solution is to have only one window with sound and video up.

This disturbance can also happen when other applications clash with either the USTREAM or FlashMeeting – Skype, for example.

**How things work together (or not)**

Never have FlashMeeting and the stream up at one and the same time unless the sound of one or the other is turned down. They also eat bandwidth and the sound and video quality will drop.

People who view the stream remotely have a solipsistic attitude to the data that is coming in and so wrongly perceive a few things.

When MirandaMods are broadcast two laptops are used.

- One is attached to the camera and sends out the videostream. If possible this is hard wired into the best Internet connection possible.

- The second laptop has a different wireless connection to monitor the sound, on separate headphones from the ones worn for the camera audio input. The operator, therefore, receives two sound sources, one a few seconds later than the other.

The two sound sources provide the evidence of whether the stream is working or not, but input is needed from the online space to indicate how the stream is being received. However, everyone's client (i.e. their own machine) has different specifications. So if one person says that the stream is down it doesn't necessarily mean that it is: it is only when three or four people report this that it can be confirmed.

People in the online space should always re-check their machines and refresh the browser before reporting that the USTREAM is down. Sometimes the picture hangs, and it is necessary to wait 10 seconds or so for the stream to reconnect. If it hasn't reconnected after 30 seconds then it probably is down.

Discourage people in the physical face-to-face space from watching the USTREAM on their laptop. It significantly reduces bandwidth – unless every user has an independent connection (for example, through a dongle) and bandwidth is distributed.

**Broadcasting skills**

The person who is responsible for broadcasting is combining a number of skills:
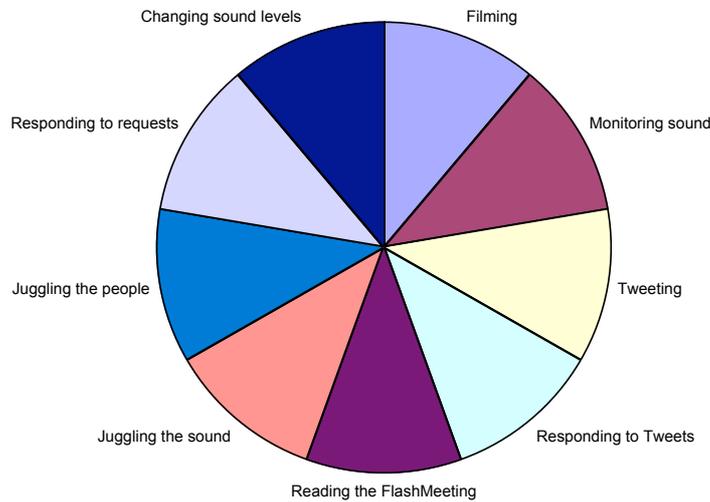


**Figure 4: Broadcasting skills required for running a MirandaMod**

The reality is that this combines the roles of five or six people. In order to maximize the impact of the event, and for it to run smoothly, it's important that everyone involved demonstrates Digital Literacy – all the skills previously outlined. These skills needs to be learned – preferably through community mentoring.

**Essential tasks for ensuring a smooth MirandaMod**

- Someone needs to take ACTIVE ownership of the collaborative online map.
- Someone needs to show it and explain the concept each time during the session. It needs to be modeled, otherwise people struggle to use it effectively. People in the Online or Representational Space need to be shown how they can contribute. This includes checking whether people have a MindMeister account, or whether they are up to their map limit, unless, that is the map has previously been created and saved as a MindMeister wikimap.
- The person or people responsible for the map need to broadcast the map's URL in the hashtag or twitter stream conversation at regular intervals.
- Create and open up a wiki to provide people with as much information as possible.
- People generally have to multi-task smartly, more often and in context.

© Cuthell, Cych & Preston

- At the end of each session copy and paste all the Twitter conversations and save them as a PDF file, so that the data is not lost after a few days. This needs to be done as a housekeeping action immediately after each session.

**When sessions are being broadcast:**

- don't stand in front of the camera or constantly move around;
- don't make inappropriate comments in front of the camera on the stream;
- try to keep whispered instructions out of camera mike range - they end up on the stream.

## Research tools

One of the ways to measure the learning that has taken place in a MirandaMod is to analyse the online collaborative maps, mostly produced using MindMeister[4]. During 2009-2010 the MirandaNet Fellowship investigated the use of concept maps for collaborative knowledge construction. Part of this work involved the development of methodologies for using multidimensional concept mapping as a data collection method, and as a medium to stimulate the creation and dissemination of collaborative knowledge. These concept maps were collected during an initial series of MirandaMods organised by MirandaNet Fellows in the context of work-based learning for education professionals.

This first stage of the research project aimed to develop a scoring system for collaborative multimodal concept maps relating to an analysis of the potential effectiveness for identifying concept development and the formation of praxis.

The web-based program MindMeister and Inspiration[5] were compared as the vehicle for this study for the creation and dissemination of knowledge, rather than simply for data collection.

Existing tools that have been used to analyse concept maps have either focused on a map's content in order to identify the level of a student's understanding of a particular area of knowledge (Ruiz-Primo, 2000; Park & Calvo, 2008), or have examined the complexity of the map itself with the idea that this complexity shows complexity of thinking as well (Mavers, Somekh et al., 2002, Harrison et al, 2002). Whilst these tools provided data about the complexity of the maps that had been created, they failed to provide data about the quality of the learning or the process of knowledge construction. They also concentrate on the learning of individuals rather than on collaborative learning (Preston, 2011).

---

[4] http://www.mindmeister.com/ Last accessed 10.02.11

[5] www.inspiration.com/ Last accessed 10.02.11

What was needed, therefore, was a system that enabled the process of knowledge construction to be tracked, identified and analysed as it takes place within a professional group. The functionality of the program enabled the elements of collaborative mapping process to be identified, together with the identity of those involved in the process.

In order to develop a new scoring methodology data sets were compiled that could be analysed across a number of dimensions. As a result of the analysis seven types of collaborative learning activities were identified in the creation of the maps: Adding; Editing; Inserting; Moving; Removing; Renaming and Repositioning. Each activity could be related to the relevant mapmaker, and the inter-related processes of constructing the map and building knowledge could be identified. The sequences of mapping actions were graphed, and the resulting graphs plotted the frequency of each activity across the progress of the creation of the maps. The graphs showed the inter-relationship of actions, particularly those of inserting, renaming and repositioning – the key activities in the process of knowledge creation.

The analysis of the maps in this initial stage indicates the potential effectiveness of the methodology in building a picture of the collaborative knowledge process, rather than the existing models of either content analysis or map complexity.

It can be further said that the complexity of the maps is directly related to the number of contributions by, and interactions of, the mapmakers. The study has revealed the complexity of the task of finding an effective methodology that reflects the multiple perspectives from which this data is drawn.  The outcomes raise a series of questions:

> How effective are collaborative concept maps in creating a record of an event?
>
> How do collaborative concept maps stimulate thinking and debate in a space and dimension other than the face-to-face environment or the virtual FlashMeeting?
>
> How do collaborative concept maps facilitate new thinking that can support professional development and feed back into their institutions?

To date collaborative concept maps have been explored in the context of MirandaMod activities. The MirandaMod sessions involved mapmakers from across the UK, from Europe and Australia.

The maps have therefore served three main purposes:

> to create a record of the event;
>
> to stimulate thinking and debate in another space and dimension than either the face-to-face environment or the virtual FlashMeeting;
>
> to facilitate new thinking that can support professional development and feed back into the institution.

© Cuthell, Cych & Preston

This new thinking is the product of a group of professional experts from a number of background and disciplines.

On the basis of the work so far it can be said that the facility of use of MindMeister, the collaborative affordances built in, so that practitioners can see the construction of the map in real time, and the number of ways in which it can be published, suggest that it is a most valuable tool for collaboration. The networked multi-authorship affordances that have been at the core of this initial exploration of methodologies can be used to identifying liminal learning processes.

These participatory methodologies include:

an index of interactivity, based on actions observed during the mapping process;

the enrichment of research methods for identifying, formatively assessing  and encouraging multimodal and multi-literacy skills in communities of practice;

the development of ways of completing, storing and tagging articles about a knowledge creation event written by a group from the map;

the comparison of collaborative mapping strategies for knowledge creation and storage with wikis;

the investigation of the ways in which collaborative mapping is combined with other technologies to enrich the knowledge creation capacity of a professional work-based Community of Practice over time;

the use of collaborative mapping as a platform for professional development, as well as for systemic change;

the exploration of collaborative international cooperation between practitioners on the ways in which education policy should reflect and enrich local practice.

Using these methodologies the MirandaMod practitioners, as co-researchers, have already gained agency in influencing local and national policy. The notion of professional practitioners using concept maps to influence policy was first instigated by teachers on an M-level course at the Institute of Education, University of London. A group collaborated on a concept map about their concepts of e-learning theory, developed from their practice-based research studies. They submitted this concept map in response to a government consultation on e-learning that was a precursor to developing national policies (Preston 2009).   In another study, funded by the UK government agency Becta, practitioners developed group concept maps based on related to education phases. In a mode of Braided Learning where the map-makers are privy to the aims of the research, they shared ideas about the *Future of ICT Tools* in schools, and analysed the results in order to advise government and industry on future directions (Leask and Preston, 2011). In a further Becta study, representatives of

the ICT community in the UK were asked to build a concept map reflecting the ways in which teachers' need for ICT CPD was being met in 2010 (Pachler, Preston, Cuthell, Allen and Pinheiro Torres 2011).

## The knowledge creation process as Bricolage

Participants in the liminal space apply the programs they have to the task in hand, and try to learn the routines as they go along. The use of the tool becomes shaped by the outcome, and the skills develop through use, because the intentional outcome is to develop new knowledge. The practice becomes one of 'do-it-yourself', analogous to one in which items are taken 'off the shelf' and used in whatever way the constructor sees fit.

The French term for this is 'bricolage' – whether for a do-it-yourself store, a builders' merchant or the act of constructing new knowledge and understanding in this way. In 'The Savage Mind' (1962) Levi Strauss used the term 'Bricolage' to describe the way in which the non-literate, non-technical mind of 'primitive' man responds to the world around him, as someone who works with his hands and uses devious means compared to those of a craftsman and who has nothing else at (his) disposal. Levi Strauss describes the bricoleur as adept at performing a large number of diverse tasks, with the rules of his game, always to make do with 'whatever is at hand'. Whereas an engineer works with concepts, Levi Strauss describes the brocoleur as working with signs, the very concrete objects with which meaning is constructed.

The process involves a 'science of the concrete' which is carefully and precisely ordered, classified and structured by means of its own logic. The structures are 'made up', and are ad-hoc responses to an environment. They establish homologies and analogies between the ordering of nature and that of society, and 'explain' the world and make it able to be lived in. The bricoleur constructs the 'messages' whereby 'nature' and 'culture' are caused to mirror each other. Levi Strauss saw bricolage as a way in which pre-scientific societies construct a belief system which explained their world.

Papert (1980) used the concept of bricolage in relation to the concept of 'chunking' (Miller, 1956), a process in which knowledge is broken into 'mind-size bites', which enables new knowledge and understanding to be constructed from it. His thesis was that the use of previously learned strategies could be used as a tool in concept formation.

Levi Strauss' explanation of bricolage and the bricoleur offers an insight that is, perhaps, applicable to MirandaMod participants.

*…a bricoleur is someone who works with his hands and uses devious means compared to those of a craftsman…(he) has nothing else at (his) disposal. … The bricoleur is adept at performing a large number of diverse tasks…the rules of his game are always to make do with 'whatever is at hand'.* (p.17)

© Cuthell, Cych & Preston

The process, then, is one of working from the specific (the task that must be completed) to the general (learning from that experience to apply to future experiences). The signs by which they work are those of the Graphical User Interface, with its buttons, toolbars and the ability to undo errors. The 'devious means' which they use utilise a range of mainly open-source software, making do with 'whatever is at hand'. Their work gives an account of their lives in a world where allusion, reference and quotation seem the only possibility.

*We have already noticed the connection between…the activities of the…bricoleur and the modus operandi of the jazz musician. …This art, - an art of signifiers, not signifieds, can be said to be truly modern …* (Hawkes, 1977 p.121.)

The synthesis must be that learning is seen as experiential, observational and a semiotic experience. The question, however, is whether content is subverted by electronic form.

Concern over the subversion of content by electronic form has been identified as 'data dandyism' (Lovink, 1995). He describes those who are *"… concerned with … the accumulation of as many immaterial ornaments as possible …"* where digital style triumphs over substance. The ornaments are a reflection of both technical skill, in that the 'data dandy' demonstrates superior competence, and technical sophistication, in that the user possesses the latest, most powerful (and most expensive) hardware, software and peripherals. The sub-text is that the user has sufficient time to devote to the acquisition of such skills. This demonstration of social worth through cyber semiotics updates the concept of fashion and conspicuous consumption (Veblen, 1899) and can be seen as particularly apposite in the acquisition and use of the latest mobile digital device.

## Learning: Informal or Formal

Cook, Pachler and Bradley (2009) suggest that the key defining aspect of informal learning is one of agency: that is who determines the learning goals. They view informal learning as a natural activity by a self-motivated learner. This could be in a group, without a tutor being aware of such activity; it could be either intentional or tacit learning, in response to some stimulus; it could be what they term 'serendipitous', without the learner necessarily being aware of what is being learnt.

So, who determines the trajectory and outcomes of learning – the institution, or the learner? Should learning only be intentional, or is incidental learning equally valid? Formal learning provides the structure, signposts, and scaffolding for a beginning learner. Informal learning, on the other hand, builds on the foundation of existing knowledge, and a sense of context that provides the framework for understanding.

Some working definitions for formal, informal and non-formal learning have been provided by The European Commission on Education and Training. The question of whether these are seen as a

blueprint for further work, or as a way of recognising the needs and progress of the individual, rather than those of the organisation, is yet to be resolved. What is of further concern is that these definitions (and embedded assumptions) are predicated on both a utilitarian basis (*recognised in the labour market and by society in general*) and are  restricted to adults.

*"Learning that takes place in formal education and training systems is traditionally the most visible and recognised in the labour market and by society in general. In recent years, however, there has been a growing appreciation of the importance of learning in non-formal and informal settings. New approaches are needed to identify and validate these 'invisible' learning experiences.*

*However, definitions and understandings of what counts as formal, non-formal and informal learning can vary between countries. At European level, the following definitions are used:*

- *Formal learning is typically provided by education or training institutions, with structured learning objectives, learning time and learning support. It is intentional on the part of the learner and leads to certification.*

- *Non-formal learning is not provided by an education or training institution and typically does not lead to certification. However, it is intentional on the part of the learner and has structured objectives, times and support.*

- *Informal learning results from daily activities related to work, family life or leisure. It is not structured and usually does not lead to certification. In most cases, it is unintentional on the part of the learner."*

The meaning-making process of Braided Learning is emerging from the observation of online communication, as communities of professionals mature in digital competence (Haythornthwaite, 2007). These first three stages of Braided Learning were established when the communities being researched were only using email. The process showing how social interaction can translate into professional action relates to the four socio-cultural communicative strata identified in multimodal theory: discourse, design, production and distribution (Kress and Van Leeuwen, 2001). As the MirandaNet participants have expanded and developed the range of technologies and affordances used, so the concept of Braided Learning has accommodated these and expanded into the liminal spaces that are no onger constrained by temporal or physical boundaries, and are therefore truly mobile.

This extension of Braided Learning theory builds on evidence that the praxis of those participants in the liminal space of the MirandaMods is one that constructs knowledge: 'the working heuristic of discovery' (Bruner, 1974). They take for granted the constraints and difficulties within which they work. What they produce is a result of their discovery of the ways in which the information given, created

© Cuthell, Cych & Preston

and found, with the tools in their hands and the time available – all transmuted into their knowledge creation. The artefact they create is in the Representational Space, and the manifestation of their conceptual development.

# References

Bruner, J. S. (1974) Beyond the information given. London, Allen & Unwin

Chandler. D. (1994) The Transmission Model of Communication
http://www.aber.ac.uk/media/Documents/short/trans.html Last accessed 08.07.10

Cook, J., Pachler, N., Bradley, C.. Bridging the Gap? Mobile Phones at the Interface between Informal and Formal Learning. Journal of the Research Center for Educational Technology, North America, 4, Nov. 2009. Available at: http://www.rcetj.org/index.php/rcetj/article/view/34/48. Last accessed 08.02.11.

Cuthell J., C. Preston, L.Cych, T. Keuchel (2009) iGatherings: from professional theory and practice to praxis in work based teaching and learning WLE Centre, Institute of Education, University of London http://www.wlecentre.ac.uk/cms/index.php?option=com_content&task=view&id=343&Itemid=85

Cuthell, J. P. (2009) Thinking Things Through - Collaborative Online Professional Development. In: Lindberg, J. O & Olofsson, A. D. Online Learning Communities and Teacher Professional Development: Methods for Improved Education Delivery. Hershey, IGI Global

Cuthell, J. P. (2008) The Role of a Web-based Community in Teacher Professional Development. International Journal of Web Based Communities, Vol. 2, No. 8 2008, pp. 115 – 139. Geneva, Inderscience

Cych, L. (2009) How To Make Video Amplify And Authenticate Community Activity. http://www.l4l.co.uk/index.php?s=supercharging+streamed+media. Last accessed 10.02.11

Habermas, J. (1984). The theory of communicative action. Boston: Beacon Press.

Harrison, C. Comber C., Fisher, T., Haw, K., Lewin, C., Lunzer, E., McFarlane, A., Mavers, D., Scrimshaw, P., Somekh, B., Watling, R. (2002) ImpaCT2: The impact of information and communication technologies on pupil learning and attainment. A report to the DfES. ICT in Schools Research and Evaluation Series No 7. Coventry: Becta

Hawkes, T. (1977), Structuralism and Semiotics, Methuen, London.

Haythornthwaite, C. (2007) 'New International Theories and Models Of and For Online Learning.' Chicago IL, USA, First Monday. http://firstmonday.org/ Last accessed 23.02.11.

Kress, G. and T. van Leeuwen. (2001). Multimodal Discourse: The Modes and Media of Contemporary Communication. Arnold: London.

Lave, J. and E. Wenger (1991) Situated Learning: Legitimate Peripheral Participation: Learning in Doing: Social, Cognitive and Computational. Cambridge University Press.

Leask, M. and C. Preston (2011) ICT Tools for Future Teachers: Becta, Coventry. Published http://webarchive.nationalarchives.gov.uk/20110125093509/http://research.becta.org.uk/ (To be moved to http://www.ioe.ac.uk)

Levi Strauss, C. (1962), The Savage Mind, Oxford, Oxford University Press.

Lifelong Learning Policy. Validation of non-formal and informal learning. European Commission Education and Training http://ec.europa.eu/education/lifelong-learning-policy/doc52_en.htm Last accessed 16.02.11

Lovink, G. (1995), *The Media Gesture of Data Dandyism* CTHEORY Theory, Technology and Culture, Concordia, Canada http://www.ctheory.net/articles.aspx?id=136 Last accessed 09.02.11

Miller, G.A. (1956), The Magical Number Seven, Plus or Minus Two: Some Limits on our Capacity for Processing Information. Psychological Review, 63, 81-97.

Pachler, N. & Bachmair, B., Cook, J. (2009). Mobile Learning: Structures, Agency, Practices. New York: Springer.

Pachler, N, C. Preston, J. Cuthell,  A. Allen and Pinheiro Torres (2011) The ICT CPD Landscape in England. Becta. http://www.wlecentre.ac.uk/cms/index.php?option=com_content&task=view&id=363&Itemid=87

Papert, S. (1980), Mindstorms Children, Computers and Powerful Ideas, The Harvester Press, Brighton.

Park, U., Calvo, R.A. (2008) Automatic Concept Map Scoring Framework Using the Semantic Web Technologies. Proceedings of Advanced Learning Technologies, 2008, 238-240. Last accessed 23.02.11 from: http://ieeexplore.ieee.org/servlet/opac?punumber=4561602

Preston, C. (2009). Exploring semiotic approaches to analysing multidimensional concept maps using methods that value collaboration. Handbook of Research on Collaborative Learning Using Concept Mapping. P. Torres and R. Marriott. Hershey, Pennsylvania/USA, Information Science Reference.

Preston, C. (2008). Braided Learning: an emerging practice observed in e-communities of practice. Special Issue: Online Learning Communities in Context. International Journal of Web Based Communities Inderscience Publishers. Guest Editors: Ove Jobring and Piet Kommers (4. 2). www.inderscience.com Last accessed 23.02.11.

© Cuthell, Cych & Preston

Preston, C. (2011 in press) Gaining insight into educators' understanding of digital technologies: three models for the analysis of multi-dimensional concept maps. Doctorate in International Education, Institute of Education, University of London library.

Preston, C. and J. Cuthell (2011in press) *MirandaMods: from practice to praxis in informal professional learning contexts* Research on e-learning and ICT in Education: Technological, Pedagogical and Instructional Issues. Springer

Ruíz-Primo, M. (2000) On the Use of Concept Maps as an Assessment Tool in Science: What we have Learned so Far Revista Electrónica de Investigación Educativa, 2 (1).  Retrieved 27.05.2009 from: http://redie.uabc.mx/vol2no1/contents-ruizpri.html

Veblen, T. (1899), The Theory of the Leisure Class, New York, Macmillan.