

My Example of a Creative Ecology

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Introduction

This narrative explores the ecological process of developing an idea and the proposition that our personal creativity is integral to our ecologies for learning, developing and achieving. It recounts the unfolding story of how I have tried to develop and apply the idea of learning ecologies over the last 3 years. It is based on a number of ecologies I developed to learn and achieve something, through which I developed myself and my understandings and in the process created entirely new performances, relationships and resources. I could have told more stories but the ones I have chosen serve to illustrate the idea of how learning ecologies are themselves a product of our creativity and provide the context for our creative self-expression.

'Creativity is a developmental process and development is a creative process' (Enrico Coen cited by Diggle 2000).

Creating

At the outset I should declare my beliefs about creativity as my interpretations of what counts as creativity reflect these beliefs. Fundamentally, my creativity enables me to bring things that are new to me into existence. These things might be ideas, objects or products, processes, events, relationships, performances or practices. But I also appreciate that a creative outcome is often a combination of my creativity and someone else's. For example, many of the illustrations in this book have been drawn by artist Kiboko Hachiyon but the ideas for the composition were usually provided by me. Together we shaped the visual narrative and the picture would not have come into existence if either one of us was not involved. Similarly, many of the ideas on which this book is based began their life in someone else's head. I used my creativity to provide a new context for exploring the idea and in the process of developing the idea gave it new meaning. I don't claim originality because the idea existed before, but I might claim novelty in the way I have personalised ideas by connecting, interpreting and weaving them into a narrative that has relevance to the educational world.

Some definitions of creativity

- Creativity is the production of novel and useful ideas in any domain (Amabile 1996)
- Creativity is the process of having original ideas that have value (Robinson 2013)
- Creativity is the act of turning new and imaginative ideas into reality. It involves two processes: thinking then producing. Innovation is the production or implementation of an idea. If you have an idea but don't act on it, you are imaginative but not creative (Naiman 2014)
- Creativity is the entire process by which ideas are generated, developed and transformed into

As a student of creativity I am aware of many definitions. The idea that creativity involves the production of new ideas that have value, underlies most definitions. Also many definitions implicitly or explicitly indicate that creativity involves a process of turning imagination into something real and tangible.

According to Barron (1969) and any creative act must satisfy two fundamental criteria namely: *originality* - something that is new like an idea, behaviour or something we have made, and *meaningfulness* - the act or result has meaning and is significant to us. The issue then is who judges something is original and meaningful, and at what level is it original - to an individual, a team, an organisation or disciplinary field, a market or mankind?

All these definitions frame creativity in a particular way. They differ in their scope and inclusivity. I struggle with conceptions of creativity that are elitist and suggest it must be limited to what other

people think is creative. At the most basic level I agree with the great Lev Vygotsky (1930) who asserts that any human act that gives rise to something new is a creative act regardless of whether that was a physical object or some mental or emotional construct that lives within the person and is known only to him. I love this concept for its humanity and its significance for learning and education.

For a long time I struggled with the idea of level - that creativity spans the results of thinking and action from Einstein, Mozart, Brunel or Jobs to my own paltry efforts. Then I came across the 4C model of creativity developed by Kaufman and Beghetto (2009 and Figure 11.1) which explains the nature, scope and influence of individuals' creativity. These authors refer to '*Big-C*' creativity that brings about significant change in a domain; '*pro-c*' creativity associated with the creative acts of experts or people who have mastered a field, including but not only people involved in professional activity; '*little-c*' creativity - the everyday creative acts of individuals who are not particularly expert in a situation and '*mini-c*' the novel and personally meaningful interpretation of experiences, actions and events made by individuals. Central to the definition of mini-c creativity is the dynamic, interpretative process of constructing personal knowledge and understanding within a particular socio-cultural context.

Figure 11.1 Four-C model of creativity proposed by Kaufman and Beghetto (2009). Source of diagram Jackson (2012)



Both mini-c and little-c forms of creativity are relevant to everyone and are particularly relevant to higher education. One might speculate that participation in these forms of creativity are pre-requisite for pro-c and Big-C creativity in later life: if we want creative professionals then we should be encouraging students to be creative. It is however important to note that 'everyday creativity can extend from mini-c to little-c through Pro-c. It is only Big-C *eminent* creativity (ibid:6) that is beyond the reach of most people. From an educational perspective it might be reasoned that by encouraging and empowering students to use, develop and make claims for mini-c and little-c forms of creativity, we are better preparing them not only for using these forms in later life but for engaging in more expert-based forms of creativity that emerges through sustained engagement with a particular domain or field of activity.

I find this model of personal creativity liberating because I can relate my own creativity to three of the categories and it accommodates the concept of creativity that I find most useful namely, 'the emergence in action of a novel relational product growing out of the uniqueness of the individual on the one hand, and the materials, events, people, or circumstances of his life' (Rogers 1961). I also think the same definition with a minor alteration (replacing the word novel with new) can be applied to a person's learning and their development and the definition provides me with a conceptual tool that unlocks the process of learning, development and creativity within the conceptual framework of a learning ecology (Figure 11.3).

Developing

The most important challenge facing all human beings is fundamentally a *developmental challenge* focused on the question of how we learn to deal with and make the most of the situations and opportunities in our lives, or the affordances that exist within our environment. Development holds the possibilities for our very existence since it is through a multitude of developmental processes that enable mankind to pool and combine his ingenuity to solve the most intractable problems. Exploring how creativity features in development is therefore worthy of exploration.

That people develop is self-evident: we can see them grow from a baby through childhood adolescence to adulthood. The *development of a person* involves progression or movement from a simpler or lower state of being to more advanced or complex forms of being. For the person involved in development it always involves the process of becoming different which invariably means learning new things by adding to existing knowledge or skill, or replacing something which I already have or unlearning something that is no longer relevant or appropriate. In this way development is integral to our daily project of perpetually becoming.

Development is about *creating difference*. It involves change along a trajectory in which the amount of change may be the result of the accumulation of many small incremental changes or it might be the effect of one or more significant changes, or a combination of smaller and larger changes as is the normal case. But the end result of development is either that something is quantitatively different to what existed before and/or something new has been brought into existence.

Motivation for creating difference or newness is grounded in the continuous search for something better which improves what exists or does something which currently can't be done. The desire to improve ourselves so that we achieve our ambitions and goals, and / or improve some aspect of the world we inhabit, are the universal motivational forces underlying our personal and professional development.

Development seems to provide a good conceptual explanation for many of the things we get involved in. We start with a problem or a situation and have to work with it or at it to understand and resolve it. All the stuff we do between the starting and end points can be called development although this seems to imply tangible and quantifiable things which might not be the case. The challenge, when faced with complex and / or uncertain situations requiring new development needs, is to know what to do and in such situations we often don't know what we need to do beyond trying to move in a certain direction.

Creativity in developing

Any discussion of developing an idea with its intended purpose or unanticipated consequence of creating difference, transforming something that already exists or inventing something new must necessarily involve the idea of creativity since creativity is the concept we use when we talk about bringing new ideas, material or virtual objects, or practices and performances into existence. But where is creativity in development?

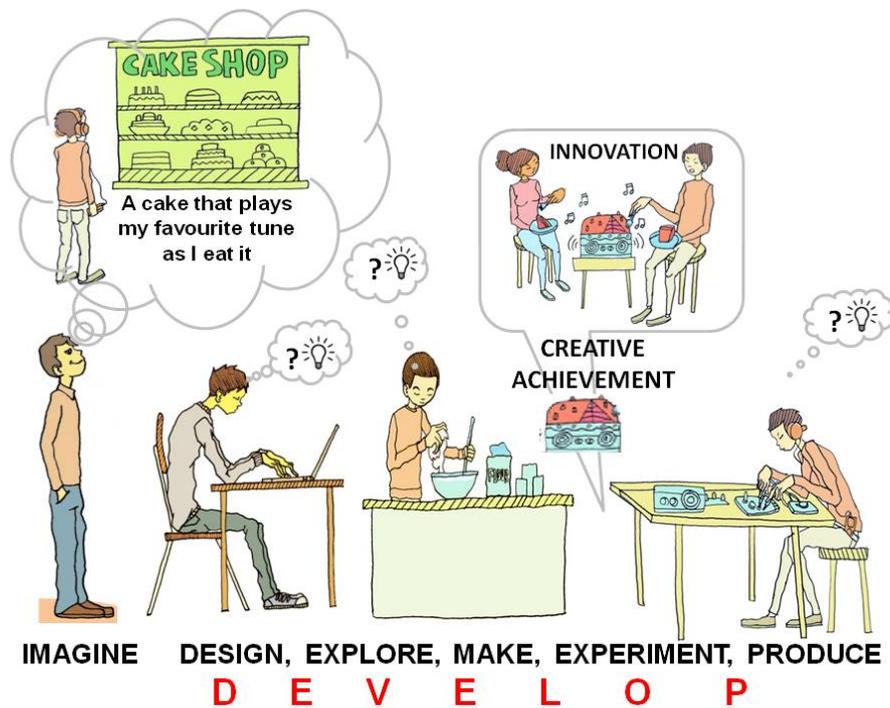
Is creativity a quality of persons, processes or products? According to Teresa Amabile (1997:3) it is all three. Persons can have, in greater or lesser degrees, the ability and inclination to produce novel and appropriate work and, as such, those persons may be considered more or less creative. Processes of thought and behaviour may be more or less likely to produce novel and appropriate work and, as such those processes may be considered more or less creative. Products (new business plans, scientific theories, artworks, articulated ideas, dramatic performances and so on) may be more or less novel and appropriate and as such, those products may be considered more or less creative. In other words creativity can be anywhere and everywhere! We might illustrate the way creativity features in a 'well structured' developmental process with a narrative describing the imaginary invention of a musical cake (Figure 11.2 co-created by Kiboko Hachiyon)

Creativity in Development Narrative

A young man who enjoys listening to music and eating cakes is standing in front of a bakers shop looking at the cakes while listening to his favourite singer on his ipod. As he looked at the cakes and

listened to his music, he had the novel, idea of a cake that plays music while you are eating it. The idea is new to him and although other people may have thought about it before, no musical cake has ever been brought into existence. This part of the story illustrates the initial creative thought that emerges in the mind of person whose interests and circumstances cause him to have this thought.

Figure 11.2 Narrative illustrating creativity in a developmental process



He starts designing and making his musical cake. It requires much experimentation and involves many set-backs. He enlists the help of the local bakery and a small electronics company. People in these businesses liked his idea and are willing to help build a prototype which can then be pitched to potential investors. The whole developmental process involves continuously solving problems and seeing opportunities in which the young man's creative and analytical thinking comes into play. Every new idea or possible solution is evaluated and judged in the search for possible right answers. Creativity flourishes in a developmental process where individuals and groups are inspired to bring something new into existence and they work together sharing an innovation if it is significantly different to anything that has existed before.

The young man sees the value and opportunity in his idea and becomes motivated to try to make a musical cake with little regard for the technical difficulty of doing so. He is convinced that he could make such a cake and sell it. So he sets about *developing his idea* and investing it with practical meaning. Using the resources he finds on the internet, he explores the possible ways in which he might create the music mindful of the costs and the potential health risks of integrating electrical devices into a cake. He hits on the idea of putting a small edible chip which he has read about, in the base of the cake, which sends a pre-recorded message or tune to a mobile phone which then plays the tune.

Creativity within integrative thinking

This hypothetical narrative shows that while the initial idea might be truly original the hard work of creativity is to turn an idea that inspires you into something real - whether it be a process, product, virtual object, performance or anything else. This normally requires a process involving much uncertainty through which ideas are questioned, affordances are identified, problems are solved, resources are found and obstacles are overcome. This developmental process requires us to be able

to imagine the problem we are working with and also to apply our analytical skills to evaluating and solving the problem.

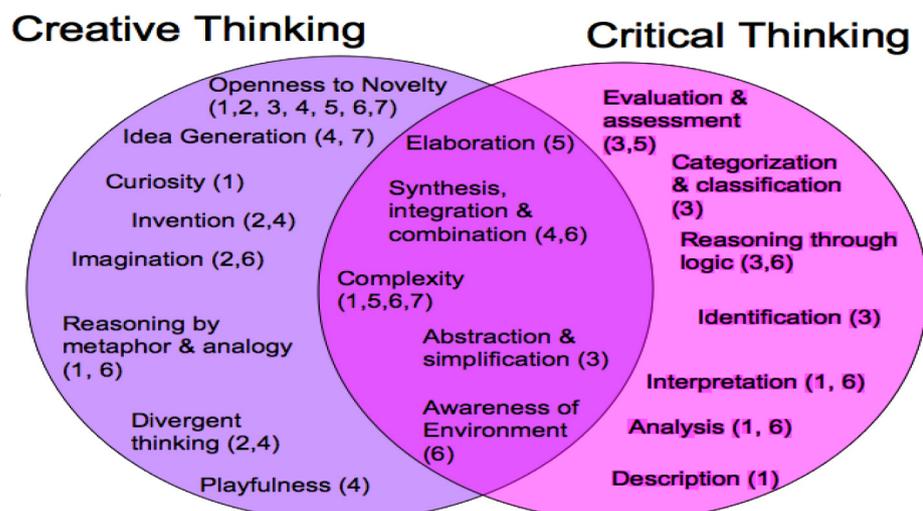
When we think of creativity we tend to think of moments when new and novel ideas come into our heads for the first time and separate out such moments from a complex thinking process. But when we tackle a problem or challenge, or explore how we might use an opportunity, we use both our imagination and more critical ways of thinking in a complex synergistic interplay. This is especially the case when we engage in a sustained process of developing ideas over a significant period of time. Puccio, Murdock, and Mance (2005) provide a tool for relating the two forms of thinking in a hypothetical problem solving scenario (Table 11.1 Figure 11.3).

According to Puccio, Murdock, and Mance (2005) specific cognitive and affective domains are activated as the process moves from start to finish. For instance, in the early stages the individual assessing the situation, is driven by their curiosity and imagination to comprehend the problem but also uses diagnostic skills such as analyzing, describing, and selecting. Puccio et al note that openness to novelty, tolerance for ambiguity, and tolerance for complexity underlie all stages of creative problem solving.

Table 11.1 Representation of a problem-solving thought process which integrates creative thinking and critical thinking Puccio, Murdock, and Mance (2005),

Hypothetical steps in a problem solving scenario						
1	2	3	4	5	6	7
Assessing Situation	Exploring a Vision	Formulating Challenges	Exploring Ideas	Formulating Solutions	Exploring Acceptance	Formulating a Plan
<i>Cognitive Skills</i>						
Diagnostic	Visionary	Strategic	Ideational	Evaluative	Contextual	Tactical
<i>Affective Skills</i>						
Curiosity	Imagining Dreaming	Sensing Gaps	Playfulness	Avoiding Premature Closure	Sensitivity to Environment	Tolerance for Risks

Figure 11.3 Integration of creative and critical thinking in problem solving based on the model proposed by Puccio, Murdock, and Mance (2005) <http://www3.wooster.edu/teagle/vendiagram.php>



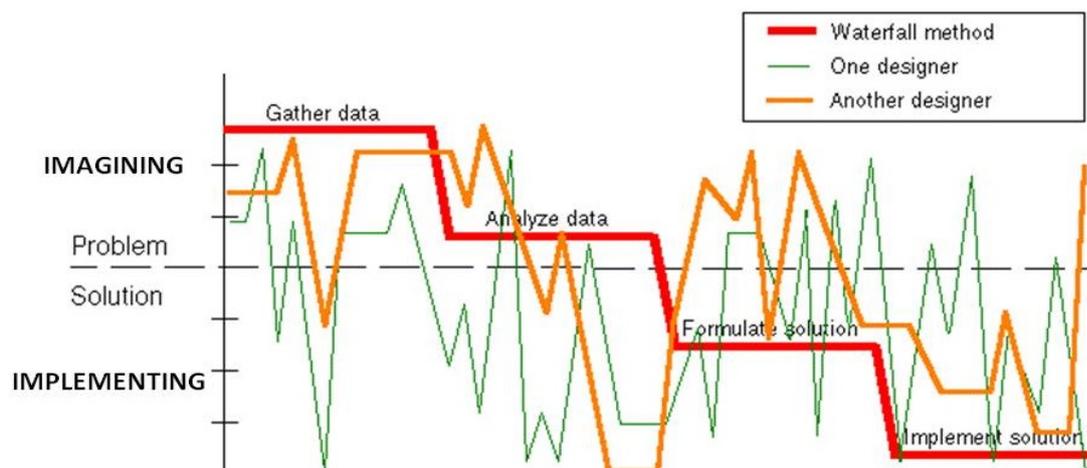
The Ven diagram (Figure 11.) illustrates how and when certain characteristics and behaviors of creative and critical thinking might manifest themselves. The numbers beside each text block refer to the steps identified above: For instance, “Openness to Novelty,” generally considered a quality of a creative thinking, can be associated with all seven steps; “Imagination” may dominate in steps 2 and 6; “Reasoning Through Logic” in 3 and 6. The diagram is intended to represent only illustrative patterns of thinking it is not intended to generalize across populations, contexts, or particular problem-solving events, except to illustrate the dynamic and complex nature of how we combine and integrate different thought processes.

Conklin (2005) cites a study by Rittel and Webber (1973) which provides an illustration of this type of integrative thinking process in action. In a study in the 1980’s at the Microelectronics and Computer Technology Corporation (MCC) Rittel and Webber (ibid) looked into how a group of engineers solved a problem. Their challenge was to design an elevator control system for an office building. All of the participants in the study were experienced and expert integrated- circuit designers, but they had never worked on elevator systems before. Each participant was asked to think out loud while they worked on the problem. The sessions were videotaped and analyzed in great detail.

The analysis showed, not surprisingly, that these designers worked simultaneously *on understanding the problem and formulating a solution*. They exhibited two ways of trying to understand the problem: 1) they tried to understand the requirements for the system (from a one page problem statement they were given at the beginning of the session); and 2) they created mental models and simulations (e.g. “Let’s see, I’m on the second floor and the elevator is on the third floor and I push the ‘Up’ button. That’s going to create this situation....”).

On the solution side, their activities were classified into high, medium, and low levels of design, with high-level design being general ideas, and low being details at the implementation level. These levels are analogous to an architect’s sketch, working drawings, and a detailed blueprint and materials list for a house. Traditional thinking, cognitive studies, and the prevailing design methods all predicted that the best way to work on a problem like this was to follow an orderly and linear ‘top down’ process, working from the problem to the solution. This logic is familiar to all of us. You begin by understanding the problem. This often includes gathering and analyzing ‘requirements’ from customers or users. Once you have the problem specified and the requirements analyzed, you are ready to formulate a solution, and eventually to implement that solution.

Figure 11.4 Patterns of thinking exhibited by life design engineers Conklin 2005:6



However, the subjects in the elevator experiment did not follow a waterfall type pattern. They would start by trying to understand the problem, but they would immediately jump into formulating potential solutions. Then they would jump back up to refining their understanding of the problem. Rather than being orderly and linear, the line plotting the course of their thinking looks more like a seismograph for a major earthquake, as illustrated in Figure 11.4.

This jagged-line pattern is typical of opportunity-driven learning, because in each moment the designers are seeking the best opportunity for progress toward a solution. It is precisely because these expert designers are being creative and because they are learning rapidly that the trace of their thinking pattern is full of unpredictable leaps.

The study demonstrated that, faced with a novel and complex problem, human beings do not simply start by gathering and analyzing data about the problem. Cognition does not naturally form a pure and abstract understanding of 'the problem.' The subjects in the elevator experiment jumped immediately into thinking about what kind of processors to use in the elevator controller, and how to connect them, and how to deal with unexpected situations, such as if one processor failed. These are detailed solution elements. These experienced designers illustrated that problem understanding can only come from creating possible solutions and considering how they might work. Indeed, the problem often can best be described in terms of solution elements.

Figure 11.4 illustrates another feature of solving a complex problem namely, trying to understand the problem continues to evolve until the very end of the process. Even late in the process the engineers returned to problem understanding, the upper part of the graph. In fact this is what is happening now as I add this section to the book only a week before I publish it!

The natural pattern of problem solving behavior may appear chaotic on the surface, but it is the chaos of an earthquake or the breaking of an ocean wave - it reflects a deeper order in the cognitive process. The non-linear pattern of activity that experts go through gives us fresh insight into what is happening when we are working on a complex and novel problem. It reveals that the feeling that we are 'wandering all over' is not a mark of stupidity or lack of training. This non-linear process is not a defect, but rather the mark of an intelligent and creative learning process. The jagged line of opportunity-driven problem solving is a picture of learning and developing ideas involving the integration of critical and creative thinking. This is the way creativity emerges when tackling novel and challenging problems in a particular context and I will claim that taken over the period of time I have been thinking about learning ecologies this pattern reflects my own process of thinking and action.

Developing an idea

Both of the narratives explain how an idea is turned into a product which can be used by others. In the process of producing the product the idea evolves and is tested and more and more ideas are connected to the original idea until the idea is realised. This is what happens in any developmental process and a similar process underlies the production of a book through which a core idea is explored and meaning is developed by connecting more and more ideas and contextualising, applying, evaluating, adapting and refining the ideas.

I am interested in how my ideas evolve. The academic in me enjoys engaging in things that I know are likely to lead to the development of new understanding and this often becomes an important reason for me to involve myself in something. I also like looking back to make sense of how something has evolved. Developmental narratives are often nested stories in which one development process lays the foundations for and connects to the next part of the developmental process. The set of developmental stories on which this chapter is based traces some significant parts of my journey as I have tried to develop my understanding of the idea of learning ecologies. In this context I would like to frame the idea of creativity using four main conceptions. The first is intellectual.

1 Creativity is the desire and ability to use imagination, insight, intellect, feeling and emotion to move an idea from one state to an alternative, previously unexplored state (Dellas and Gaier's 1970)

The second is ecological.

2 the emergence in action of a novel relational product growing out of the uniqueness of the individual on the one hand, and the materials, events, people, or circumstances of his life (Rogers 1961).

The third is concerned with impact or influence - my creativity embraces three of the four domains in Kaufman and Beghetto (2009 and Figure 11.1) 4C model of creativity namely, 'mini-c' the novel and personally meaningful interpretation of experiences, actions and events made by individuals, 'little-c' creativity - the everyday creative acts of individuals who are not particularly expert in a situation and 'pro-c' creativity associated with the creative acts of people who have developed considerable understanding of a field or domain.

The fourth is developmental: creativity emerges through a process that is broadly consistent with the pattern of thinking and action depicted in Figure 11.2 namely: imagine, explore/design, make/experiment/test /refine, produce and share. Furthermore this pattern is one of integrating imagination and critical thinking or divergent and convergent ways of thinking if you prefer (Figure 11.3 and 11.4) in a manner that is consistent with Dellas and Gaier's (1970) concept of creativity.

My Ecology for Developing and Applying an Idea

There was no shop window moment for I suddenly thought I want to explore the idea of learning ecologies and I claim no credit for imagining the idea. I have probably been aware of the general idea for at least ten years and I knew that there was a considerable body of literature that had already developed and used the idea. There was no eureka moment, just a sense of its time to do something with this idea'. So my first thought is that, like most academics setting out to write a book or article, I am standing on the shoulders of those who have gone before and any newness and originality I can bring to the idea is therefore contextual: situated in my desire to explore, develop and apply the idea of learning ecologies within the broader knowledge development task I'm involved in associated with lifewide learning and education and my interests in creativity. My proposition is that within the ecologies I create to explore the idea I will use my imagination, insight, intellect, feeling and emotion to move the idea from one state to an alternative, previously unexplored state (Dellas and Gaier's 1970). What will emerge from this process of using the affordances I have to explore the idea, is my book - which I interpret as a novel relational product growing out of my uniqueness and the materials, events, people and circumstances of my life: and in accordance Rogers (1961).

March-September 2013 - Initial exploration and publication

Three years ago, in March 2013, I began to actively explore the idea of learning ecologies. I created a purpose and a goal to write a chapter for the Lifewide Education e-book and from this developed a second goal - to produce the September Issue of Lifewide Magazine on the theme of learning ecologies. I created an ecology to learn and develop my understanding drawing on what I already knew including knowledge I had gained from inquiry and research I had undertaken previously. I involved many people including family, friends, peers I knew and peers I didn't know.

In July 2013 I published my first article outlining the concept of learning ecologies and offering my initial definition '*the process(es) I create in a particular context for a particular purpose that provide me with opportunities, relationships and resources for learning, development and achievement*' (Jackson 2013a). I created a visual aid to help explain the dimensions of my learning ecology as I understood it at that time (Figure 11.5).

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Figure 11.5 Components of an individual's learning ecology (Jackson 2013)

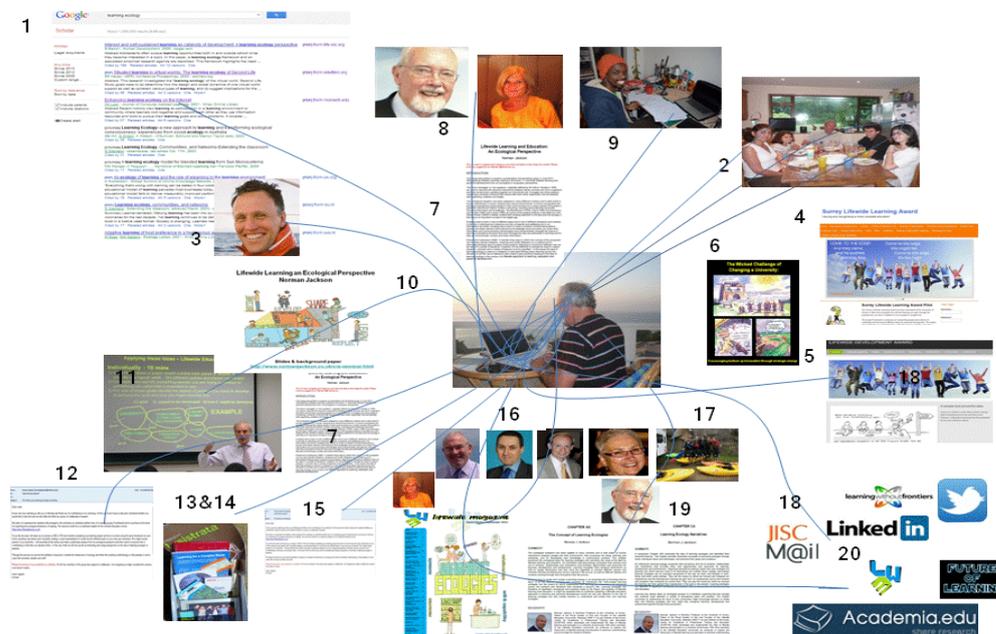


The illustration is heuristic rather than hierarchic. It represents the integration

and interdependence of the elements of *context, relationships, resources, (the most important being knowledge and tools to aid thinking), and an individuals will and capability to create a learning process or learning ecology for a particular purpose.* Such actions may be directed explicitly to learning or mastering something but more likely they will primarily be concerned with performing a task, resolving an issue, solving a problem, or making the most of a new opportunity.

I published a second article in December 2013 (Jackson 2013b) in which I illustrated the idea of learning ecologies through a series of narratives (chapter 3 is based on this article). It included my own narrative of learning about learning ecologies. Figure 11. summarises key aspects of this narrative. It reveals my process for learning and the sequence of events and activities through which learning and development took place, the people who were involved in my learning, and the new resources I created in the process. This visual aid became my tool for codifying a learning ecology and a mediating artefact to help me explain my understanding to others.

Figure 11.6 My learning ecology for learning about learning ecologies. March-December 2013. Numbers refer to specific parts of my learning process (see Jackson 2013b and chapter 3).



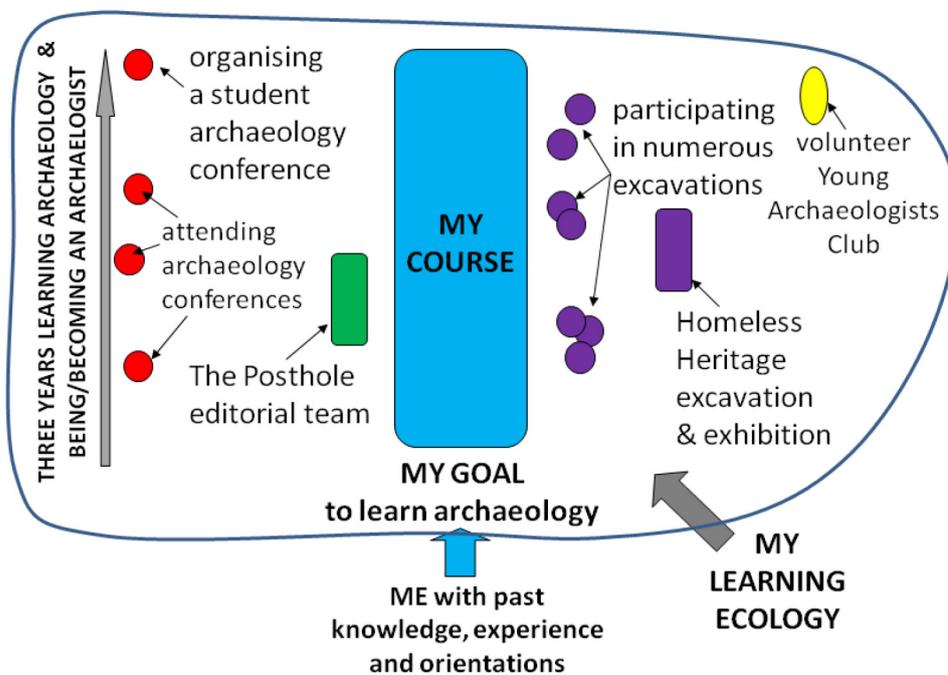
So where did creativity emerge in this initial process of developing the idea? Was it in the creation of a simple conceptual framework (Figure 11.5) and/or visualisation and representation of my learning ecology (Figure 11.6) which contextualised and gave concrete meaning to the conceptual framework? Or was it embedded in the way I brought my process for learning into existence finding and using the affordances that were available to me in the environment? Or in the new products that arose from the process - the articles and magazine? Or in my changes in understanding brought about by my efforts to learn? Was it none or in all of these things? My sense is that it is in all of these things given the reference points for creativity I am using. Judgements as to whether my creativity lies in the pro-c field of Kaufman and Beghetto's (2009) 4C model of creativity I leave to my peers. It probably requires a period of time to elapse in order to show whether the ideas have value.

Applying the idea to students' development

There was little point in developing the idea of learning ecologies if it had little relevance to students' learning and their behaviours. Between 2006-11 while working at the University of Surrey I interviewed many students and gathered written stories of their learning and development. Armed

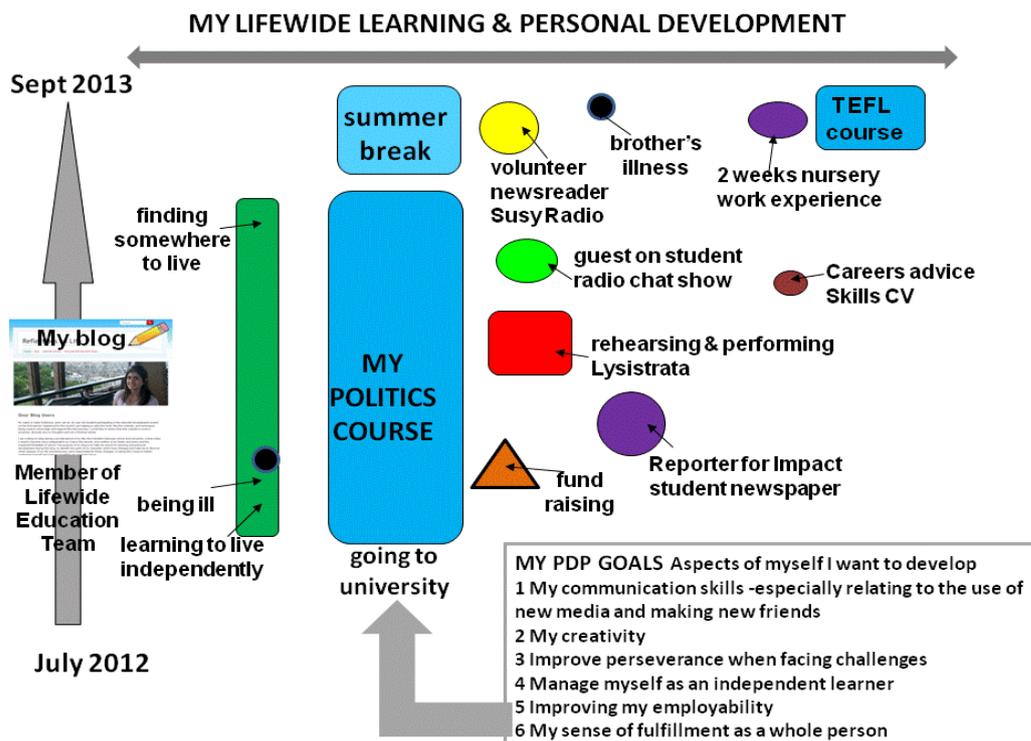
with my initial ideas about learning ecologies I could now (in 2013) try to make sense of these narratives through the idea of learning ecologies.

Figure 11.7 Michael's learning ecology to become the archaeologist he wanted to be



experienced an ah ah! moment when interviewing an archaeology student. The story he told (reported in chapter 3) of what he did to develop himself into the archaeologist he wanted to be gave me a new and inspiring perspective on what a learning ecology might mean to a higher education student. He readily grasped the idea and together we co-created a map of his learning ecology (Figure 11.7) that I use in many of my talks to explain the idea from a students' perspective

Figure 11.8 the learning ecology Natasha created to achieve her personal development goals



I wanted to demonstrate how learners might be encouraged and helped to recognise their own ecologies for learning. The opportunity arose (the affordance in my life) when Natasha, one of Lifewide Education's student volunteers, piloted the Lifewide Development Award <http://www.lifewideaward.com/> over a 15 month period. During this time she maintained a Personal Development Plan and a blog to keep a record of the more important learning experiences which became the resource for reflecting on her own development. Her synthesis <http://lifewider1.weebly.com/> included a map (Figure 11.8) which showed all the experiences she felt had enabled her to develop in line with her own personal development goals.

So how was my creativity involved here? I conducted interviews with the students and recognised the value of the idea of a learning ecology in interpreting their narratives. I also saw the value in representing complex stories as a map of interconnected experiences (perhaps this is connected to my training as a geologist!) and helped the students produce the illustrations that synthesised the experiences they described. These images became important mediating artefacts very useful in helping me understand the idea of learning ecologies (create meaning) from the students' narratives.

Testing the idea with educational developers

In November 2013 I gave a keynote talk at the annual SEDA conference in which I presented my ideas on learning ecologies. Prior to the conference I had spent several months working with members of the educational development community to develop the knowledge for my presentation using email and on-line surveys. I summarised these in a working paper that later became a chapter in an e-book. I used the same tool to represent the way I had created an ecology for learning with members of the educational developer community (Figure 11.9).

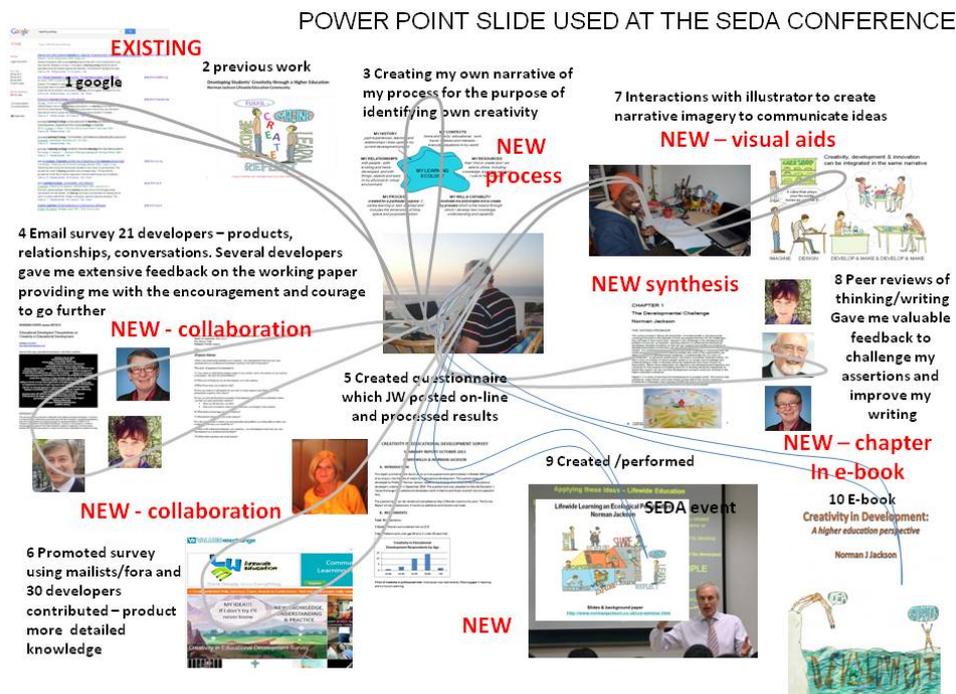


Figure 11.9 The ecology I created to develop the knowledge for my presentation at the SEDA conference.

In this way I shared my ideas with other educational developers and through the feedback I received gained confidence in the idea. In mapping and accounting for the activities I

had undertaken in order to learn and develop myself, the resources I had used, and the relationships I had formed. It codified the process of learning and developing something which is often difficult to capture and appreciate. I made the point during my talk that I believed the formation of an ecology for learning and developing something was a creative act in its own right as it brought something that did not exist before - my process for learning and subsequently my learning and the products of learning (eg presentation, articles) into existence.

How was my creativity involved in this process? I indicated on my slide all the areas where newness was involved: where things that did not exist before were brought into existence. These included new relationships, new survey tools, new syntheses which became chapters, and new illustrations (working with a talented artist we produced Figure 11.2 to explain creativity in development).

These were bound together in a process (a learning ecology) that was created for the specific purpose of delivering the SEDA talk. My sense is that my creativity was involved in recognising the affordance for learning in the SEDA event, and the subsequent imaginings, synthesising, producing and performing activities through which new things were brought into existence. Judgements as to whether my creativity warrants a pro-c label (Kaufman and Beghetto's 2009) I leave to my peers.

Applying the idea to the higher education curriculum

Developing ideas and practices relating to the idea, are never ending projects and the imagination is always searching for new opportunities to apply the idea and develop new understandings. From my current understandings I now appreciate this as a search for and recognition of affordances (chapter 2) that emerge through the circumstances of my life.

In April 2014 I was invited to teach/facilitate the 'Scholarly Innovation and Creativity Module' at the University of Limerick. The module is part of the 'Specialist Diploma in Teaching, Learning and Scholarship' offered by the University's Centre for Teaching and Learning. The Diploma is intended to align with the professional activities of early career academics and doctoral candidates in order to provide an accredited programme for developing high level, evidence-based competence in teaching, learning, scholarship and innovation in higher education settings.

The story of my involvement began in February 2014 when I was contacted by a senior manager at the University of Limerick to see if I could deliver the module which was scheduled for early April. I agreed in principle but wanted more information about the module before committing. Unfortunately I was only sent information about the course the week before it was due to be delivered but we proceeded on a basis of trust. I was trusted to deliver the module but I was able to make changes to the process and content as long as the generic outcomes were honoured.

I could see that the module would provide me with affordance to not only present and test my ideas on learning ecologies but also to involve participants in using their own creativity to apply my ideas to their own teaching and learning contexts. In essence I created an ecology to encourage the members of the group to share their beliefs and understandings of the meanings of creativity and my role was to stimulate thinking and record participants' perspectives. I also collated and curated these knowledge assets and incorporated them into the teaching and learning process. I had done this sort of thing before so this process was not new for me. What was new was that I introduced the idea of learning ecologies and then facilitated a process whereby the participants imagined and designed a course they were teaching so that it empowered and enabled learners to create their own learning ecologies. The net effects was to generate 16 designs that the participants presented to the group. In doing so they demonstrated the feasibility of designing a curriculum that was more supportive of students' own ecologies for learning. These designs were then developed further in a post course assignment. While it's fair to say that not all participants fully grasped the challenge the process resulted in many good and some excellent designs an example is given in 11.10.

So where did my creativity lie in this process? I would say that in this example my creativity was in seeing the affordance in the teaching situation to develop further the idea of learning ecologies by helping participants relate and apply the ideas to their own teaching and learning contexts. This led to thoughtful and meaningful designs that were shared and then reflected upon and refined after the course had finished. The process enabled me, and the group of higher education teachers, to see how the idea of learning ecologies could be meaningfully utilised in a range of disciplinary teaching and learning contexts.

Figure 11.10 Example module design to encourage students to create their own ecology for learning. In this 3rd year radio documentary module students develop and produce a 30 minute documentary. Students have to identify a real world theme for their documentary, plan, research and record it then produce the radio broadcast. The whole process is self-directed and self-regulated and involves self and peer assessment. .



Applying the idea to personal and professional development

There are defining moments in the history of an idea and for me an important moment was when Sheffield Hallam university took the idea of learning ecology seriously enough to invite me to give the keynote talk at the annual teaching and learning conference. After the keynote they planned to run 8 parallel workshops on the theme of personal and professional learning ecologies. The affordance this event offered was huge: I don't think I had ever

The learning ecology concept for your keynote is really very timely..... We will run up to 8 parallel workshops for those breakouts. They allow us to directly respond to your keynote and the findings from the survey you have in mind. A.M. (email from conference organiser)

been offered the chance of presenting and then having a whole conference involved in applying the idea. I had several discussions with the organisers about how this might work including a face to face meeting in Sheffield and a 'training' event for the people who would be facilitating the parallel workshops.

The purpose of the workshop was to examine how the idea of an ecology might be applied to particular personal and professional development scenarios

experienced by participants. Participants were invited to identify a significant experience that they had been involved in that was driven by their own interests or need, through which they had changed and developed as a person. Individually, they had to annotate a learning ecology template that was provided and create a narrative that:

- explained the contexts and any challenge(s) they were addressing and identified the goals
- described the process they created or got involved in
- identified what they did to develop/achieve/cope/survive
- identified the people/relationships that were important in their experience
- identified resources that were used or created
- summarised the ways in which this experience changed/developed you
- identified any ways in which they used their creativity

In pairs participants had to share and discuss their narratives of learning, development, achievement & creativity and using the ecological metaphor - identify three important characteristics that they could recognise in their developmental processes. The outcomes from this process were shared and discussed with the whole group. Participants engaged with the task and feedback from participants and workshop facilitators indicated that the process worked as a way of representing and making sense of personal experiences and some of the stories told were extremely powerful.

Figure 11.11 shows the learning ecology I created for the conference. It is similar to others I have created whereby I seek to engage participants before the conference via email and on-line surveys and then include the survey data in my presentations. In this example my creativity was involved in designing and creating the overall process, in designing the workshop and on-line surveys, in researching with participants, their perspectives and in synthesising and presenting the results. In this enterprise I was assisted greatly by the organisers of the conference.

Figure 11.11 The learning ecology I created for the Sheffield Hallam University conference and workshops.



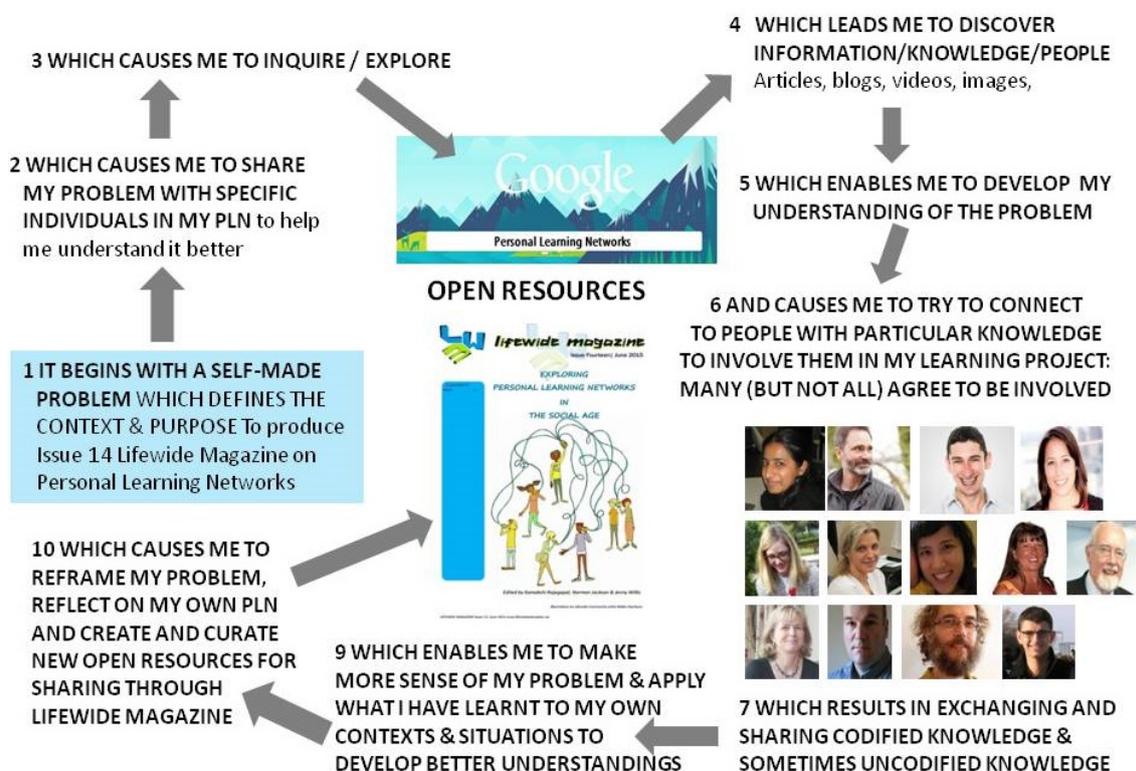
Personal Learning Networks

In April 2015 I began building a Personal Learning Network (PLN) to explore the idea of PLNs and produce a thematic issue of Lifewide Magazine in the belief that PLN's are an essential component of a learning ecology (Jackson, Rajagopal and Willis 2015). I set out to find a leading authority on PLN's, someone who had considerable research-based knowledge and found our Guest Editor Kamakshi Rajagopal. Her contribution was vital to the success of our knowledge building project. In my own contribution I explained the process of developing a PLN specifically for the purpose of exploring the idea and producing the magazine (Figure 11.12). The insights gained enriched my understanding of the way in which PLN's feature in our learning ecologies and the way in which our creativity was involved.

PLNs are like the blood vessels in our body or the roots and capillary vessels of a tree. They provide the structure and means of connecting to others and the means of tapping into the medium and nutrients for learning - the flow of information, knowledge and wisdom within our learning ecology. They connect our ecology for learning with the ecologies developed by others for their

I believe that our creativity is involved in the way we find and develop relationships and find and using the affordance in the relationship to achieve goals that are of mutual benefit. Our creativity is in the way we communicate, how we present, sell and negotiate ideas so that individuals are persuaded to collaborate.

Figure 11.12 Explanation of the process of PLN formation in order to produce the PLN issue of Lifewide Magazine (Jackson 2015)



Production of this book

We have now reached the point in this sequence of connected learning ecologies when the idea of a book came into existence. In April 2015 I received an email inviting me to participate in a seminar formed around Lifelong Learning Ecologies. I was of course delighted to accept and carried on with the rest of my life until about 10 weeks before the seminar I decided to do something to prepare. I saw the affordance in the situation and decided to bring all my past thinking and writings together into a book. I began work on the book on August 20th and my plan was to start by collating and reviewing what I had already written to identify gaps and work out some sort of structure. But once initiated the project took on a life of its own. I would expect nothing less: you cannot produce a book without a substantial ecology for learning. One thing to note was that planning and implementing the project occurred simultaneously and ideas began to emerge immediately. For example in the first few days I decided to set up a web page and publish my draft chapters and invite people who were interested to read them and provide me with feedback. I managed to get the first couple of draft chapters on-line by the end of August. It took me a while to go from the known (which is not so interesting or engaging) into the unknown (which is interesting and engaging) but when it happens a new feeling of energy, interest and enthusiasm for the project takes hold. Figure 11.13 provides a sense of the journey I have undertaken and shows the salient features of my conception of my learning ecology.

Figure 11.13 The learning ecology I created for this book.



I will use my conceptual framework for a learning ecology (Figure 11.14 and chapter 2) to identify and describe the key features of my ecology for producing the book. In this type of project the product (the book) and my learning are inseparable.

Figure 11.14 My representation of a learning ecology



My ambition to produce the book was motivated by my *proximal goals* to prepare for the Barcelona seminar and my desire to provide something new and useful to seminar participants. Both provided affordance to communicate ideas. Ten weeks separate the starting and end points in Figure 11.14. But I could extend this into the past to connect with other ecologies for learning about learning ecologies over the last two and half years and even further back to connect to ecologies where I have explored ideas relating to lifewide learning. I could also extend this into the future as in the following three months I participated in a number of events that also informed my thinking and I undertook the editing and revision of what I had written and added new material, like this chapter.

My ecology for achievement (the production of the book) was formed in the context of my ongoing involvement in lifewide education and my proximal goal of preparing for the Barcelona seminar and other things I'm involved in during this period of time eg facilitation of a university workshop on the theme of self-directed self-regulated learning and participation in a mini mooc on the theme of Creativity for Learning in Higher Education. These event-based contexts all provided *affordance* for me to engage in ways that helped me develop, test and evaluate the idea of learning ecologies and the way creativity featured in them..

At the heart of my learning ecology is the *space* I created for thinking, inquiring, developing, reflecting, imagining, writing, sharing and discussing my ideas, and for finding and incorporating the ideas of other people through the book, which constitutes the principal (but not the only) *mediating artifact* created through the process. This thinking space is liminal or transitional - in the sense it represents the space 'betwixt and between' past ecologies through which I have developed my understanding and the new representations that were emerging through the book.

The central activities throughout the process are thinking, I like to think it involved combining in an integrative way imagination, which I used to visualise and conceptualise and critical thinking, which I used to evaluate my visualisations and conceptualisations. These thinking processes fed into my writing and the illustrations I produced based on the drawings of Kiboko Hachiyon. Writing was the most important activity I undertook in this ecology it was my process for organising, connecting, synthesising, representing and curating my thoughts. I was assisted and enabled through this process by a range of *technological tools* - my laptop with word processing, diagramming and picture editing software, email, google and the internet, and eventually LULU the on-line publisher. During the initial part of my process I abandoned social media like Twitter and LinkedIn in order to focus on the core writing task but I then I began to use social media - academia.edu, LinkedIn and Twitter to gain feedback on ideas.

My habitation of this space began by assembling and stitching together the thinking and writing I had already done in the form of e-book chapters, magazine articles, blogs, and power point presentations. This was a fairly mechanical exercise but as writing and thinking progressed a new sort of space began to form as imagination was fired, flaws and gaps were identified, new questions and perplexity emerged. This space was created by a curious and inquiring and often perplexed mind, open to new ideas and influences. It is this liminal state of uncertainty, perplexity and excitement that keeps me engaged and searching for the new ideas and stories that enable me to come to know differently to what I knew before.

As the representation of ideas took shape through the writing process I reach a point where I want and need to share what I have written with interested people and peers to gain feedback. I need to create space for discussion and conversation. Whether ideas are accepted or not does not matter so much: although of course I hope that readers see value in them. What really matters to me is the feedback I receive and the conversations I have that enable me to think some more about these ideas or open up entirely new thinking. I began by inviting people I know and trust from my personal learning network to comment on my thinking, and posting my drafts online so that anyone can read and comment. But soon I began to circulate invitations more widely through the professional networking sites LinkedIn and academia.edu and through invitations via Twitter. Unfortunately, I received little feedback through this open invitation although I could see that the chapters had been viewed and downloaded many times.

In mid September I facilitated a workshop at Manchester Metropolitan University on the theme of new perspectives on curriculum designs so I incorporated some of my ideas on learning ecologies into

the presentation and workshop activities to gain feedback from a group of academics. The process of putting my powerpoint presentation together made me think about the way I was presenting the idea of a learning ecology and the presentation provided me with a useful mediating artifact to communicate and invite discussion about ideas. The person who organised the event (who happened to be an ecologist!) provided me with some useful written feedback on two of the draft chapters.

My aim was to have the book ready in advance of the Barcelona seminar so that it could provide an underpinning resource for my contribution. I 'finished' most of the writing in mid October and uploaded 10 draft chapters to my website and sent a notice to participants inviting them to read whatever interested them and let me have any feedback. I did not receive any feedback but during the seminar I did try to connect my ideas to the work that the OU University of Catalonia were involved in with on-line learning. The seminar itself informed me of some of the research being undertaken in Spain on the ITC enabled learning ecologies of primary school teachers and I made some valuable contacts for my PLN and my future learning.

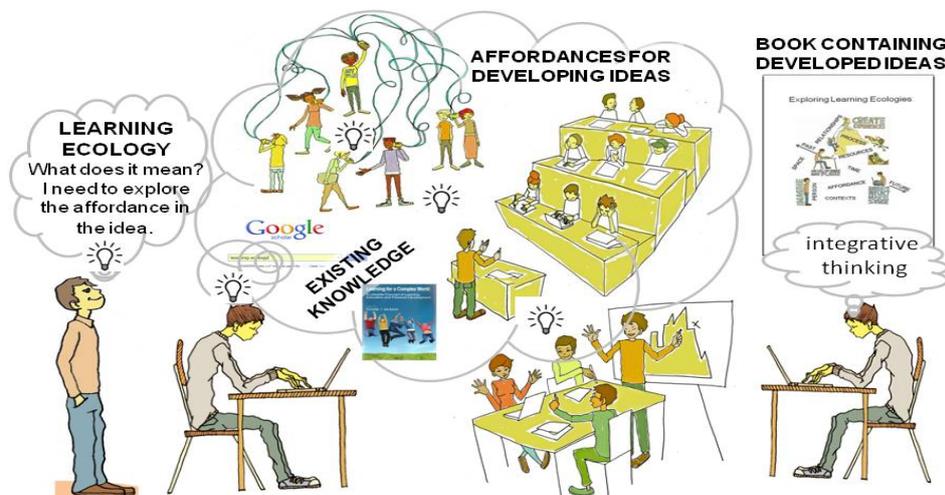
My Learning Ecology

I have used this chapter to outline my journey with an idea and to share my understandings of how I tried to develop the idea of a learning ecology by using the idea itself to describe my journey. It's not a journey that was planned, rather it was a journey where affordance for learning and developing ideas emerged along the way and grew from the circumstances of my life my *contexts* my purposes and my goals.

Over a three year period of time I recognised *affordances* that held potential for action. Driven by my desire to explore this idea I devoted time, energy and effort to creating a *sequence of learning ecologies* that I have connected in order to develop the idea to a previously unexplored state.

I used a lot of *existing resources* and I produced *new resources* like magazines, illustrations, blog posts and a book, which all emerged from the actions I undertook. They were unique to me and related to the materials, events, people and circumstances of my life, my purposes and the particular goals I set for myself. But I was helped and enabled to produce these things through *relationships* I had formed with people, with events and with myself. The relationship with myself was particularly important in this exploration as I drew heavily on my own life experiences to imagine and interpret the idea. Relationships with people close to me were also very important as I could observe in real time events in their lives that I could also draw on in my imaginings.

Figure 11.15 Representation of my development process suggesting that my creativity was in the affordances I recognised for developing the idea and the ways and means I realised these affordances to achieve my goal



Imagine. Find affordances and build ecologies to explore idea. Explore/read
Experiment/apply/evaluate ideas. Re-imagine. Design/Make/Write. Share

D E V E L O P

At the start of this chapter I showed a representation (Figure 11.2) of a developmental process through which an original idea was turned into an innovative product. Figure 11.15 attempts to symbolically represent my developmental process to explore my idea and create an entirely new and original product that embodies the ideas I explored. I suggested that creativity emerges through a developmental process that is broadly consistent with the pattern of thinking and action depicted in Figure 11.2 namely: imagine, explore/design, make /experiment/ test /refine, produce and share. Figure 11.15 attempts to symbolically represent my developmental process I believe that this pattern of thinking, action and emergent creativity was evident in the developmental process for this book (Figure 11.15). The process that resulted in a book was not imagined in April 2013 when I set my mind to exploring the idea. How could it? to explore an idea means that you go where the idea takes you. As I look back I now realise that I developed the idea through the affordances I recognised and acted upon as they emerged through the circumstances of my life.

I am many things but one of them is a writer and my medium for creative self-expression is my writing. When I immerse myself in writing I lose myself, often listening to my favourite musicians and composers which heighten my pleasure. While there is undoubtedly slog there is also joy and the result always feels creative. Within my unplanned *emergent process* I believe that my creativity embraced three of the four categories that Kaufman and Beghetto (2009 and Figure 11.1) describe namely: '*mini-c*' the novel and personally meaningful interpretation of experiences, actions and events I have created or been involved in, '*little-c*' creativity my everyday creative acts that like seeing affordance in a particular situation and in the decisions and actions I take to imagine and make things happen, and '*pro-c*' creativity which I believe is in the development of idea through the *making of the book*, through this constellation of learning ecologies. But recognition of the value of this work as a creative product rests with my peers in the field of education and learning sciences.

A few weeks before I finalised the book manuscript I helped facilitate a conversation involving higher education professionals which explored the way our creativity features in our developmental processes.⁽¹⁾ It caused me to reflect on my own development process and I came to see my own creativity as *seeing* the affordance for something in a situation. This idea fits well my experience of developing ideas for this book. Over the last three years, I have repeatedly seen the affordance in my life for exploring the idea. I knew that through my interests and commitment I would find ways of applying and developing the idea eg through production of a magazine, presentations, workshops and teaching situations, life more generally and ultimately this book. The ecologies I create to learn and develop the idea are the means to exploit and realise the affordance.

My developmental process brought new tangible products into existence - a book, book chapters, magazines, presentations, teaching and learning strategies, survey tools, working papers and website content including blog posts. My hope is that these products of my creativity also have within them affordance in the sense of inviting people who read them to assimilate, adapt, contextualise and utilise ideas in their own educational contexts and practices. That is the real creativity in this sort of product: it's in the affordance that fires the imaginations of others and causes effects that cannot be imagined.

Development is a never ending journey. Never ending because even when I hang my pen up so to speak, and write no more about these things, there will always be someone else to pick up the ideas and begin their own journey to move an idea from one state to a previously unexplored state. That is the way ideas develop and how they travel through the minds and practices of people, across cultures and throughout the history of human existence. My ecology for learning how to develop an idea is simply one small contribution to the ecology of learning involving all mankind.

Post script

Writing and producing a book is undoubtedly a labour of love. You care so much about what you are doing that for a while it becomes the most important purpose in your life. The ecological process you have engaged in means you have formed a deep relationships with and attachments to your ideas and the meanings you have invested in them: and this can be dangerous. A few days before this book was published I had a conversation with Maha Bali in which she told me that she hated frameworks and drew my attention to an article she had written critiquing their uncritical use.

Using frameworks to study the social world is like looking at a still image through tinted glasses – making our perspective limited and color-blind – when the reality is complex and dynamic with colors and sights and sounds and smells and subtleties that cannot be captured in a frame. Frameworks attempt to make chaos legible, but by doing so, they can distort our perspective on the chaos, often reducing it into something unrecognizably neat and comprehensible (Bali 2015).

I agreed with much of what she had said and felt I needed to acknowledge that my whole book had been formed around an idea that I had tried to explain through a conceptual framework that made sense to me when I applied it to the ridiculously complex emergent phenomenon of living and learning: a framework that might make little or no sense to others. I felt it entirely appropriate to finish this book by citing the excellent advice she gives.

as researchers [and teachers], let's challenge, mess up, allow emergence and ignore when appropriate; as educators, let's make sure our students do not treat them as something to "follow" but something to look at occasionally and maybe get inspired by, but never get bogged down by (Bali 2015).

Note

1) [#LTHEchat 43 Exploring Creativity in \[my own\] Development](#) Blog post 22/1/16
<http://www.normanjackson.co.uk/scraps-of-life-blog>

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