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The Work of Imagination

Curated resources exploring the nature, role and value of imagination in learning, education, work & other aspects of life

Edited by

Norman Jackson & Douglas Cole

THE WORK OF IMAGINATION

Exploring the nature, role and value of imagination in learning, education, work and other aspects of life

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Foreword
Ronald Barnett

Ron is a distinguished scholar authoring over 30 books. He is Emeritus Professor of Higher Education at University College London's Institute of Education and President of the Philosophy and Theory in Higher Education Society. In his academic work, he has been leading the development of a new sub-field, the philosophy of higher education. He has characterised his position as that of a social philosophy of the university, at once realist, critical, imaginative, and practical, in which he has been attempting to identify concepts and principles that offer ways of enhancing universities and higher education in an uncertain age. He was involved in the early work on lifewide learning at the University of Surrey and has been a supportive member of the Lifewide Education core team since its inception.

'The work of imagination' is a provocative phrase. It is a busy phrase. How can the imagination constitute work? What might be meant by *that*? It is, though, a phrase that has profound import, especially in and for our times.

Our times are exhibiting all manner of closures. Populist governments limit the institutions of democracy (a free press, an independent judiciary, autonomous universities and so forth). Oppressive states incarcerate those who critique their regimes (including university academics). The algorithms of the search engines and social media constrain the range of connectivity. Internet hacking produces a nervousness that prompts self-censorship. We approach the condition of the surveillance society, such that an interiorisation results, with individuals keeping themselves and their thoughts to themselves. Group think becomes almost institutionalised, as enclosed networks form. Those in power retreat from spaces of questioning. Critique is curtailed.

In such a world, the shutters come down. In universities, those disciplines in which hope might have been invested for opening windows and allowing in new air, new perspectives - the humanities and social sciences - are marginalised; and again not infrequently as a matter of deliberate state policy. More broadly, education is now understood to be a means of developing 'cognitive capital'. Critics of the world are no longer wanted in this Weltanschuung. So the sanctioned frames of understanding the world draw in. This is worrying on two accounts.

In this situation, many turn to the imagination but it is an imagination of escape, of fantasy, of delusion, and of malevolence. The conspiracy theories abound; the populists present their imaginative ideas of the way the world can be (if only the votes would flow their way); the deliberately malicious invent stories that they know will have traction in the internet social media (for example, in propagating a denial of the ecological crisis). These are malign forms of imagination, understandable as opportunisms in the democratic vacuum.

Others, in response, seek comfort in technological fixes. The internet of things, the takeover of professional functions by computers (after all, they can analyse data and make seeming judgements all day long without a break), a centralisation of decision-making, and powerful computer modelling: all these and other developments are called up in aid to suggest the imagination is superfluous. The technological world of the fourth industrial revolution (4IR) will work much more efficiently and productively without the imagination. By all means, let's have a measure of creativity for 'innovation', to work within the bounds of the given sense of what is needed for this post-capitalism to function, but the imagination is likely only to hold up matters, and prove to be an unnecessary distraction.

This is the situation against which the case for the imagination has to make its case. No wonder it is barely heard. On the one hand, the imagination comes in a horrendous guise, seducing the unwary and ushering in totalitarianisms of various hues. On the other hand, the imagination is superfluous to requirements. Cognitive capitalism, in harness with the digital age, uncompromisingly excommunicates the imagination. In this situation, the imagination is caught on the horns of a dilemma. Either the Scylla of accommodating to a technological and economic aridity or the Charybdis of producing non-feasible utopias. Is there any space for a different conception of the imagination?

We are faced with a profound problem here. The imagination may be needed more than ever - precisely to confront the dilemma just described - but it is by no means clear as to the form it may take such that it is going to be adequate to the tasks it faces. Simply to speak of the imagination, no matter with what resource and - indeed - with what imagination (!) will fall short of the goal unless we stand back and give the idea of imagination itself attention in its own right. Indeed, as noted, in itself the imagination may lead us into malign ventures.

How, then, might the imagination receive its justification, especially as a definite component in education? It gains its justification - and indeed its legitimation - by possessing no less than six components. It involves a serious attempt to illuminate the world, it anchors itself in but seeks to go beyond contemporary understandings, it looks to usher in a better world, it conveys a spaciousness of contemplation, it contains a fair level of criticality, and the world that it wishes to bring forward constitutes a feasible project. Each of these components reflects a particular moment, respectively that of ontology, epistemology, ethics, space-and-time, critique and realism.

We can say a little more about this panoply of conditions of imagination by picking up the key term in the theme of this issue of the Lifewide Magazine, that of 'work'. It is straightaway evident that the exercise of the imagination in the sphere of education is no jejune practice but is highly demanding. It is hard and exacting work.

Famously, Hannah Arendt made a crucial distinction between work and labour. Labour has its place in the realm of necessity while work has its place in the realm of realisation. Education, we may observe, *should* lie in the realm of work, providing a space of self- and community realisation but, unfortunately, has been press-ganged into the realm of necessity, with the alienation and anomie that comes from that. (Attrition rates among students are rising worldwide and increasingly students are committing suicide, even in some of the world's 'elite' universities.)

The imagination, therefore, has to be accorded its place in the realm of realisation and freedom (or, as some would say, of emancipation). It has to be work, and it will be hard, demanding and continuous work. It will have to be given space, it will have to be critical of the world as it is, it will have a care for the world (it will speak for the glaciers), it will take account of the best of contemporary understandings but go beyond them, it will have a sense of the longue duree of time and space (of this small and fragile planet in the universe), and it will frame educational projects that are utopian but yet possess a degree of feasibility.

Norman Jackson has long been associated with projects and thinking concerned to encourage lifelong and lifewide education. This has been a lifetime's venture that has required huge pools of imagination, which has also inspired others across the world. Norman is one of the great educators of our age, an exemplary presence in bringing thought and practice together (doubtless aided by his days as a geologist). It is entirely appropriate and, perhaps, inevitable, that the imagination has become a large theme in his work, to which this issue of the Lifewide Magazine is testimony.

If they are to have any degree of coherence, if they are to realise their potential, both lifelong and lifewide education have to be imaginative. And they must take in each other's washing in doing so: lifelong education has to contain an imaginative sense of its potential for enlargement through the lifespan - for lifewide education. And lifewide education has to have a sense of it being part of a lifelong becoming, responding in time and space to situations as they present, and living out imaginative discernments (dreams even).

These considerations place huge demands on any who espouse the value of the imagination in education. As indicated, if it is to be worth its salt, the imagination has to be grounded *and* has to be utopian, has to be disciplined (in heeding the six conditions suggested here), and has to become perpetual work. The world is such that there can be no days off; well, perhaps one day a week. After all, the world does not sleep and there is much to be done.

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Introduction to the Work of Imagination

Norman Jackson

"Imagination is what makes our sensory experience meaningful, enabling us to interpret and make sense of it, whether from a conventional perspective or from a fresh, original, individual one. It is what makes perception more than the mere physical stimulation of sense organs. It also produces mental imagery, visual and otherwise, which is what makes it possible for us to think outside the confines of our present perceptual reality, to consider memories of the past and possibilities for the future, and to weigh alternatives against one another. Thus, imagination makes possible all our thinking about what is, what has been, and, perhaps most important, what might be." Nigel J. T. Thomas [cited in 1 p. 47]

This is powerful stuff. If imagination makes possible all our thinking about what is, what has been, and what might be, then imagination is essential to our contemplation of who we are, who we were, and who we might become. It is our imagination and our ability to make use of our imagined thoughts that makes us unique amongst the inhabitants of this world. But more than this imagination is the driving force behind our ability, desire and need to shape and reshape the world in every conceivable way for good or ill.

Imagination sits at the heart of our Lifewide Education project which embraces Eduard Lindeman's vision, *'the whole of life is learning therefore education can have no ending'*[2]. It is this inspiring vision of a comprehensive, inclusive, ecological, lifewide and lifelong concept of learning and development embracing all the dimensions of our life that seems most relevant and appropriate for the uncertain, turbulent and disruptive white water world[3] we inhabit.

We are approaching our 10th anniversary and in the last few months, our small team have used their imaginations to reflect on what has been and imagine what might be. Our 2030 strategy paper[4] sets out our vision for a community of networks in which we try to support the sharing of ideas, experiences, practices and research across the multitude of practitioner networks in education (Figure 1).

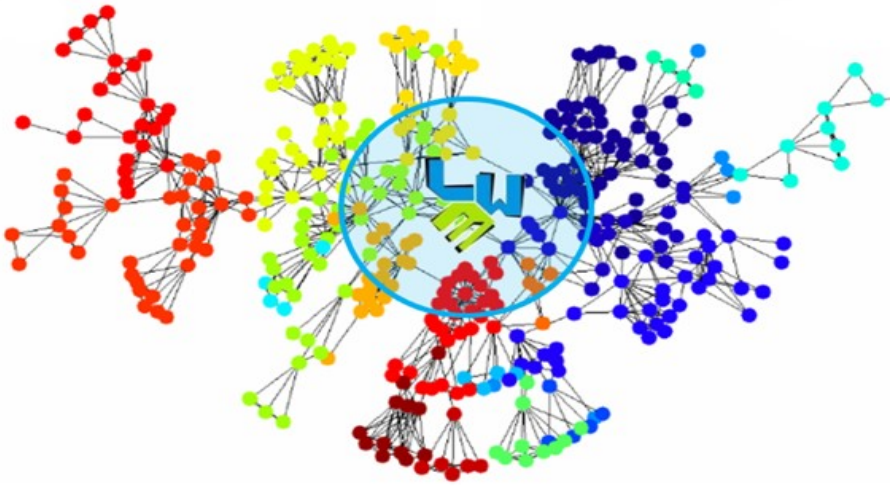


Figure 1 Our vision for Lifewide Education as a community of networks to connect many different areas of practice: a network of diverse imaginations[4].

By selecting themes and topics that are relevant to all domains of practice we hope to attract and engage people from many different domains. We have chosen 'imagination' as our first topic because it is crucial to professional work and learning in all domains of higher education and beyond. Whether we are academics/faculty within a discipline, or colleagues working in such diverse areas of practice as employability, enterprise, careers education, widening participation or personal development planning, we cannot develop or innovate without our individual and collective imaginations. This topic really does matter and we hope that the views and ideas expressed in this magazine will inform, inspire, empower and fill you with hope, for it is imagination that inspires people try to make their world a better place.

Behind every issue there is a story

Thanks to our imagination we can make a story out of almost anything. Over the years I have come to appreciate that underlying every issue of Lifewide Magazine there is a story drawn from the circumstances of my life. This is the 23rd issue of the magazine and it is the first to explore the idea of imagination, although we touched on it in issue # 19 when we explored the idea of mental time travel by using our present to explore the past[5]. I am at a loss to explain why we have neglected such an important topic for lifewide learning. I can only imagine that we take it for granted because it is integral to every other exploration that we have undertaken. Indeed, the act of exploring requires imagination.[6] It is interesting to note that many of the contributors reported that they had found it valuable to think and write about imagination in the contexts of their contribution.

A number of recent events drew my attention to the need for 'Lifewide' to explore the idea of imagination. The first was my participation in a zoom summit organised by Gillian Judson, who leads the ImaginEd project and network to which we contribute. During the summit we were asked to discuss three questions about imagination and after the event we were invited to provide our written responses to the questions. I didn't find the questions all that engaging. So, I sent Gillian a message suggesting that a better question for any discussion about imagination would be: 'how do we actually use our own imagination?' "*If we were to take any day and think about how we used our imagination during the day - from the moment we opened our eyes to the moment we had our final thoughts of the day.. what would it look like?"* Gillian thought it was a good question and invited me to write a post for the ImaginED blog which I wrote over the next few days. It's fair to say that my question took me through an interesting and enlightening process that helped me understand some of the ways in which my imagination worked for me during one fairly ordinary day in my life.[7]

While I was writing my post for ImaginEd, I participated in another zoom event. This one was organised by the Learning Innovations Laboratory (LILA) at Harvard University and it was the summit at the end of a year-long inquiry into learning ecologies. I had been invited to contribute to the first event last October and I was delighted to join the summit, especially as two of my favourite thinkers and writers – John Seely Brown (JSB) and Ann Pendleton-Jullian (see photo below) were the guest speakers and facilitators. I was not disappointed and one of the key points they made was that our need for imagination has never been greater as more and more we are enfolded into a hyperconnected, contingent and increasingly disrupted 'white-water' world, where the only certainties are uncertainty and change and a regular dunking in the turbulent waters which we are seeking to navigate. During their presentation at the LILA summit it struck me quite forcibly that they were making a compelling case for why education needs to take the development and productive use of imagination more seriously and I am delighted that as I wrote this introduction Ann accepted my invitation to contribute to this curated collection of perspectives.[3] I am no stranger to Ann's ideas. A few years ago I read the book[8] she wrote with JSB in which they outlined a concept they called, 'pragmatic imagination', in which imagination works with perception and reasoning to enable us to think about things and situations from many different perspectives including perspectives that have never existed. It is this productive entanglement of cognitive and psychological processes – perception, reasoning, imagination, beliefs, values and emotions, that enables us to respond in our unique ways to our unique circumstances through the creation of mental images and models about things that only exist in our thoughts. Such mental imagery enables us to travel backwards and forwards in time to explore possibilities, revisit memories to 'see' what might have happened if situations had been different, and see and feel situations through the eyes of others. We are able to draw on these powerful mental processes to inform any decisions we make about future actions and behaviours. This pragmatic and

Harvard Graduate School of Education

Founded in 2000 at the Harvard Graduate School of Education's Project Zero, "Learning Innovations Laboratory (LILA)" is a consortium of researchers and practitioners who are leaders in the field of organizational effectiveness, learning, innovation and change. They collaborate by sharing experimental work and emerging thinking in order to generate effective future practices. With the input of academic experts from a variety of disciplines, these leaders collectively become a 'learning lab' in which they learn with and from one another about the contemporary challenges of human learning & innovation in organizations. LILA is an invitation only learning community that actively explores how current research can inform the decisions they take on key challenges and initiatives in their organizations

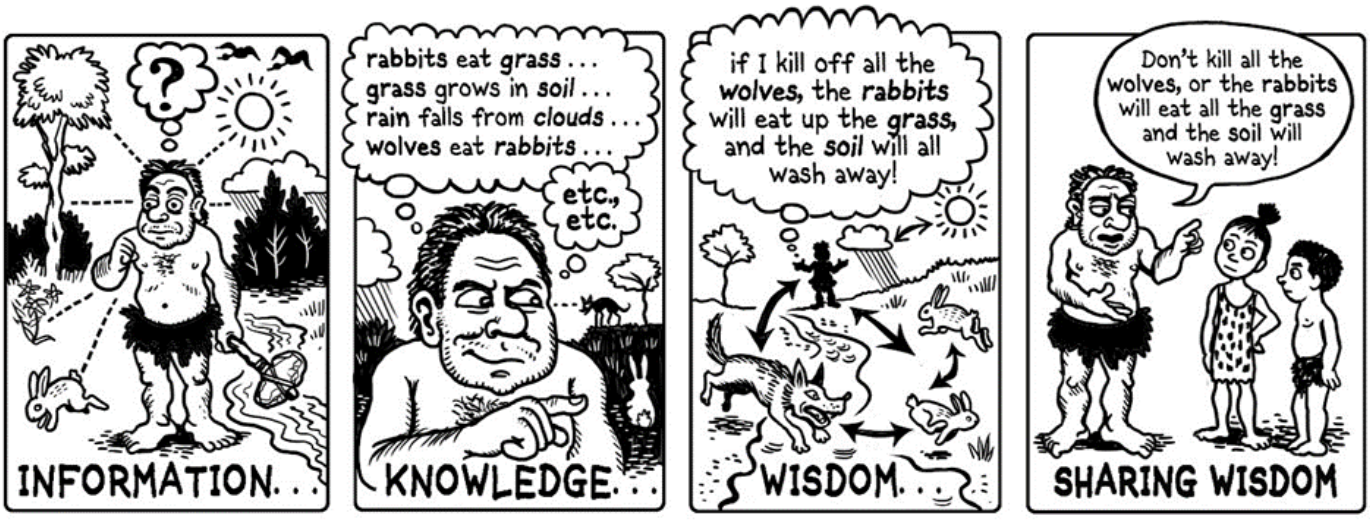
integrated way of viewing the cognitive and psychological processes that go on in our inner world made a lot of sense to me and I have drawn on the concept in the development of my ecological model of learning and practice. It also seems to me that the model could provide the underpinning knowledge for new pedagogical practices that aim to encourage the productive entanglement of cognitive and psychological processes in which imagination plays an important role.

The idea for an issue of Lifewide Magazine devoted to 'the work of imagination' emerged from these two experiences, and in the context of searching for a theme that might resonate with the diverse community of practitioners we serve. But it took another circumstance to be acted upon. At this point I need to introduce my new Co-Editor, Dr Doug Cole. We had been discussing ideas for the next issue of the magazine for some time but neither of us was overly enthusiastic about the topic we had chosen. I shared my idea for the magazine and sent him a copy of 'my day in the life of my imagination' story and he responded positively to my suggestion. During the week that followed we combined our imaginations and a number of ideas emerged until we felt we had a form that might work. This process itself was one of imagining possibilities – possible themes and contributors, possible ways of engaging our community, and imagining what purpose it would serve and what the end product might look like.
There followed several weeks, much hard work in turning imaginings into doings as we composed and circulated notices (open invitations to contribute) and invited specific individuals who we would like to contribute. As always, imaginings do not always translate into accomplishments and the process was a bit messy. Neither can we imagine everything and the joy of engaging in these sorts of projects is new opportunities emerge because we are open and actively searching for such opportunities.

What is the work of imagination?

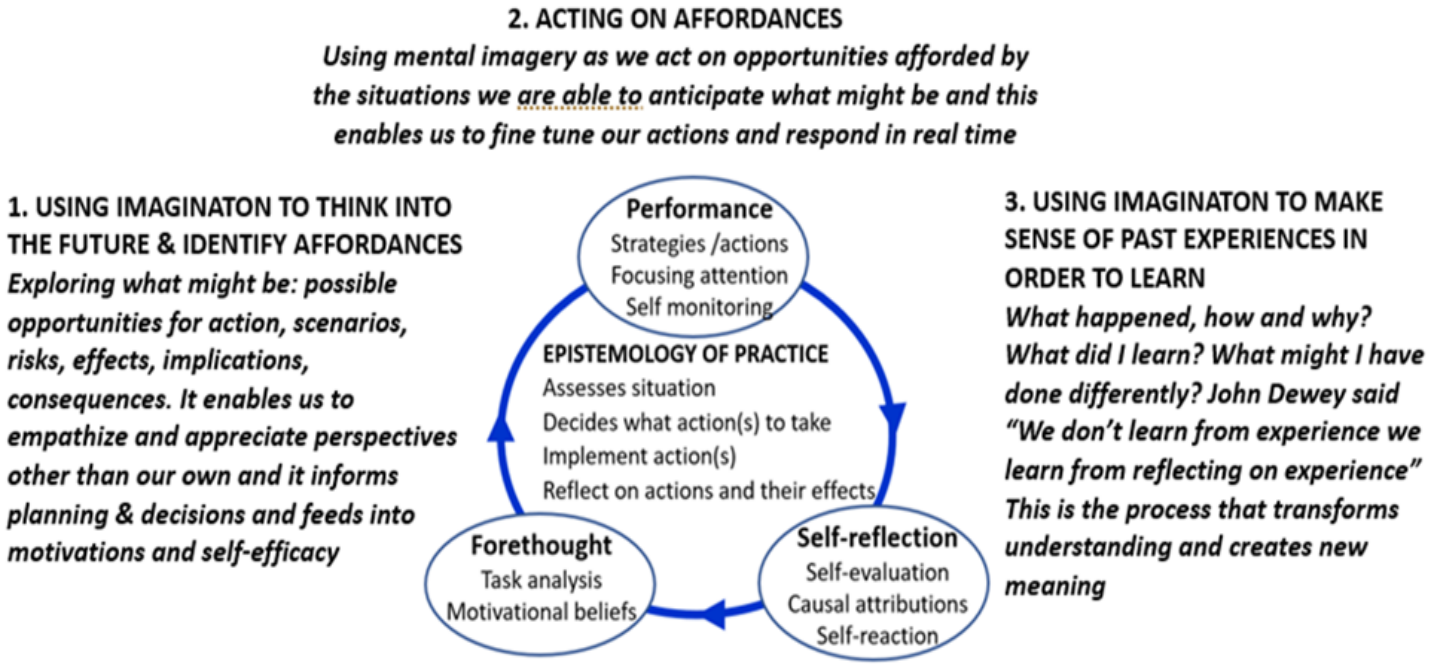
This magazine offers many perspectives on this question but, put simply, the work of imagination is essential to enabling us to be human. Just imagine a world without imagination. Humans would only develop culturally and technologically in line with what they stumbled across as they lived out their lives. They would not be able to think of things that did not yet exist, nor would they be able to connect up the dots and fill in the missing pieces in their world to understand how things fitted together, nor would they be able to go backwards in time to think about their experiences and draw from them deeper meanings. Humans would not develop and pass on their wisdom that comes from reflecting on experience without imagination and people would not be able to make sense of the world in the ways that we are able. We would not have our religions, our art or our science because all require imagination.

Figure 2 One of my favourite illustrations by cartoonist Tom Chalkley. We need our imagination in order to 'see' and make sense of the world not as isolated observable facts but as an integrated living whole.



Imagination is central to our ability to practice in any field. I can demonstrate this by reference to what Michael Eraut calls the epistemology of practice[9] or Barry Zimmerman calls self-regulation[10]. Figure 3 attempts to illustrate these two theoretical perspectives and shows that pragmatic imagination[6], connected to and integrated with perception and reasoning and embodied in action, is important in all aspects of these models.

Figure 3 How imagination is used in two holistic models of practice. Michael Eraut's epistemology of practice [9] and Barry Zimmerman's model of self-regulation [10]



So it is not surprising that education has a pivotal role to play in fostering imagination, as Kieran Egan so eloquently puts it! [*We need a] "richer conception of imagination, which sees it not as some particular intellectual function largely distinct from rationality, but rather as a flexibility, energy, and vividness of mind that imbues rational activity with life and richer meaning. [His] essay explores some implications of taking this richer conception of imagination seriously in education, focusing on its role in re-sisting conventional, stereotypical thinking, in learning, in its relationship with memory and memorizing, in its connection with narrative and metaphor, in the development of social virtues such as tolerance, in its contribution to a sense of mental freedom, in its support of the idea of, and pursuit of, "objective" knowledge, of its connection with our emotional development, and in its relationship with visualization, originality, and creativity."*[11] In this issue several other contributors add their voices to the call for educational action including Gillian Judson, Doug Cole, Rob Ward, Alison James and others.

Seeing the possibilities in everything including ourselves

We have already explored some of the work that imagination does. I would like to introduce here an idea shared by Ann in her LILA talk, that relates imagination to the way we transform the world. Ann referred to a quote by Joshua Cooper Ramos in his book 'The Seventh Sense: Power, Fortune, and Survival in the Age of Networks', in which he says *"The seventh sense… is the ability to look at any object and see the way in which it is changed by connection."*[12] This sense is entirely dependent on our ability to see, feel and comprehend with our imagination working in tandem with other cognitive and psychological processes.

We might relate this idea to the production of each issue of our magazine – which is an empty vessel for communication and the sharing of meaning. To give it life requires the object to be connected to people who are willing to breath life into it by sharing their thoughts and feelings, their experiences and their understandings (meanings) through their writing.

But Joshua's quote is missing something important, namely to see the world through the eyes of the object :*"the ability to see the world as any object sees and experiences it and see the way in which we are changed by connection."* We need this ability to relate to others (living objects) and to empathise with them, to see the world as they see and experience it so that through this relationship we can be changed. So that we can adjust our actions and behaviours in ways that are likely to be more receptive and responsive to their needs, and we are more likely to be generous and compassionate in what we do because we care about our effects of them. By seeing the world through the eyes of someone else we are more likely to feel how they feel, as our brain activates similar emotions to those they are feeling. As Gillian Judson points out in her article[13], we need the ability to see the world through the eyes and experiences of other living and non-living objects that make up our world if we are going to sustain our very existence and the existence of everything in our global ecosystem. Our imaginations enable us to connect in a profound way to the ecological world which we are a part. As Tim Ingold points out, *"Every organism has an environment: the organism shapes its environment and environment shapes the organism. So it helps to think of an indivisible totality of "organism plus environment"- best seen as an ongoing process of growth and development"*[14]. We need our seventh sense to see, feel and understand this relationship.

The work of imagination enables us to see the world through the mind of another person and empathise, share something of how they think and feel about it. In his article Chris Jones, a School Employability Manager at Nottingham Trent University, says *" I need to understand the client's situation from their perspective rather than overlaying my personal values or interpretation onto it. This in turn requires not only the ability to question and listen, but also to imagine what things look like from where they are sitting."* [15] We might extend this aspect of the work of imagination into the past. Imagining what the past was like – how, why and when people did certain things, is central 'to see a situation from a perspective that is not present minded' is an important capability for anyone wishing to understand the world beyond their awareness of their own history.

Seeing the world through the eyes of another object can provide us with fresh perspectives and insights into the magical ecological world of which we are a part. As I was writing this I encountered this wonderful embroidered image that someone shared on my Twitter feed: a bird's eye view of allotments. By thinking, 'what might a bird see flying over some allotments' the maker of this wonderful tapestry was able to embroider a fresh perspective and then share it with people she does not know so that we can all enjoy her imagination.

Collette Kinley @sewnbycollette · 22h

The plot thickens! The end is in sight of my latest embroidery. Allotment a bird's eye view. #embroidery #textileart #allotment #garden #stitchedartisart

Using imagination in the service of others and other things enables us to develop relationships through which we and others (or other things) can flourish. As a simple illustration, I am aware that every time I invite someone to contribute to the magazine, I try to imagine how, if I was them, I would respond to the request. I ask myself, why would they want to spend their time and effort in doing what I am asking and what can I give them that will encourage them to involve themselves in my project? How might they see the benefit and value to themselves from being involved? Such thoughts help me find the words that I hope will engender similar feelings to the feelings I have. In other words, I am searching for meanings that will help me connect with the person (a living object) and build a relationship with the potential to transform.

Earlier, I used the metaphor of the white water world for the sort of world we need our imagination (and every other resource we have) to deal with it. But what about imagination in other aspects of our life, that lie outside the turbulent waters so to speak. How do we use imagination in the moments that we control and shape that enable us to express ourselves. Universally we associate imagination with creativity and our sensitivity to things in the world that inspire us to express ourselves, often in ways that are unique to us and our circumstances. As I was writing this passage I happened to check my facebook feed. Every day my

brother in law, a busy vet, posts a picture of his porridge on the top of which he makes a picture or design that reflects some aspect of his life. The picture on today's bowl of porridge was a picture of himself looking a bit down in the dumps with a belt for support because he has pulled his back. It struck me as a simple illustration of how he uses his imagination every day to convey something meaningful in his life through the medium of porridge: something that is as a much a part of him as his imagination! He sees the materials from which he makes his porridge as objects to be transformed by connecting them to the events and circumstances of his everyday life and using the artefacts he creates to help him record and reflect on his life. By sharing his gift with family, friends and many others who follow him through social media he is sharing his imagination and his life in ways that entertain, amuse and sometimes convey a serious message.

Our challenge

"The challenge of making sense of the imagination has always been like trying to catch smoke with one's bare hands. How does one define it such that it isn't so amorphous as to slip through one's grasp, or so rigid as to become simplistic to the point of uselessness?[16:ix-x] So Doug and I are delighted that our 31 contributors from 6 continents have risen to this challenge and shared their imaginations, ideas, experiences and practices. We would like to express our sincere gratitude to all of you who have enabled us to explore the work of imagination from many different angles, perspectives and contexts to help us make better sense of what it means to all of us. Out of this curated collection of perspectives grows the idea that the work of imagination is to inspire and enable us individually and collectively to form and transform ourselves and the world around us.

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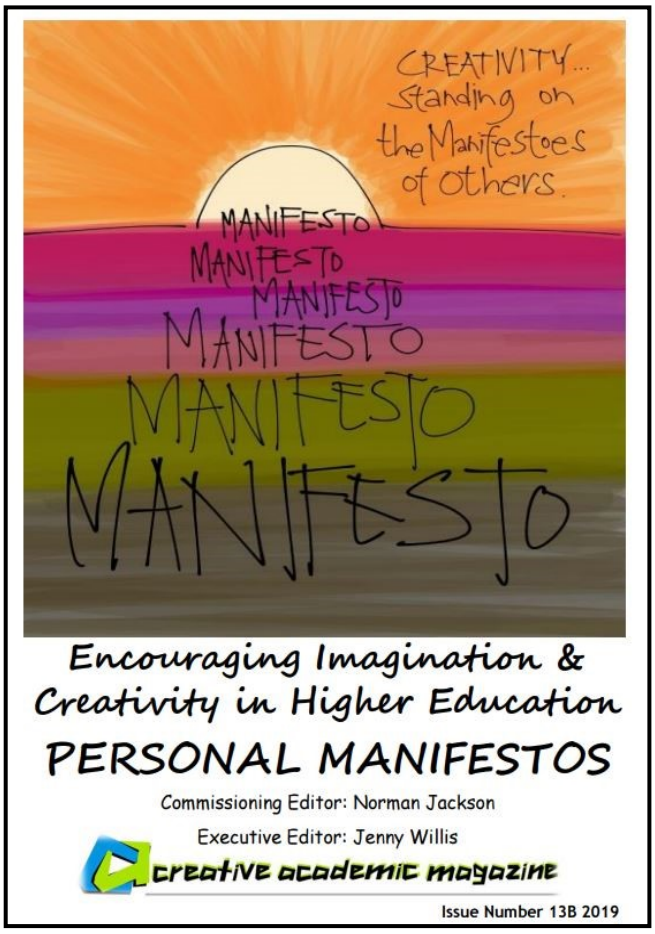
Norman Jackson

Commissioning Editor Lifewide Magazine

Lifewide Education believes that imagination is essential for human flourishing at any level of society. We also believe that not enough attention is being given to the explicit encouragement, development and use of imagination in higher education teaching and learning experiences. The purpose we have imagined for this magazine is to make the case that there is a need for higher education to develop pedagogies, curricula and cultures that encourage and enable learners to use their imaginations not just in the contexts of their disciplinary learning but in all aspects of their lives. In other words, let us appreciate and celebrate the fact that imagination is a lifewide / whole of life phenomenon and not restrict it to a programme of study. And let us also people need their imaginations to help them survive and flourish over a lifetime of living in the turbulent white water world as well as needing their imaginations to express themselves for the unique, creative person they are. We have to start somewhere. Our first step in our call for action is to raise our own awareness of the role that our own imagination plays in our own lives, our own learning and practices that seek to transform our material and social world and enable us and others to be and become the person we or they want to be. If you would like to contribute to this curated collection, please send your article to the Commissioning Editor lifewider1@gmail.com. We will include your article/resource in a supplement.

In 2019 our sister organisation Creative Academic created a manifesto to encourage and support imagination and creativity in higher education. We think it provides a useful framework for examining our beliefs, our values, our educational designs and our practices as educators. It's free to download at:

https://www.creativeacademic.uk/magazine.html



Meet Dr Doug Cole – Our New Creative Director

Doug is Deputy Director of Employability at Nottingham Trent University, a Senior Fellow of the Higher Education Academy (HEA) and former Head of Academic Practice at HEA (now AdvanceHE). He has a long -standing and passionate interest in 'employability'. In 2012 he developed the concept of a framework for employability to support institutions in developing more consistent approaches to this important area of work, with a particular focus on curriculum design. In 2013, he co-authored the HEA publication Defining & developing your approach to employability: A framework for higher education institutions with Maureen Tibby. He has continued to develop and test his thinking and research in practice since. This work embraces the lifewide as well as the lifelong dimensions of learning, as testament to this he recently completed a PhD which sought to define and develop a more effective approach to employability in HE with a particular focus on undergraduate sports programmes. Doug is a highly committed educator and we are delighted that he has agreed to join us as Creative Director. We will benefit hugely from his expertise, his energy and his enthusiasm for lifewide learning and his creativity as a successful agent for change in the higher education system.

OPEN INVITATION TO JOIN & PARTICIPATE IN A NEW LINKEDIN FORUM CREATIVE DIRECTOR DOUG COLE

With the current pandemic and the way the world is constantly changing, there is no better time to revisit the principles of Lifewide Learning and re-engage with the community of practitioners we connect with across the world. With a shared aspiration to support all learners to fully recognise the benefits of the range of opportunities they have to learn across multiple spaces, both in formal education and beyond in life more broadly. Through this free-to-access community we have the opportunity to share resources, ask questions and exchange in a supportive, collaborative and safe space, we have the opportunity to learn from each other. We therefore wanted to try and adopt a slightly different focus with our existing LinkedIn group moving forwards.

We would like to evolve this group over time to become more of a resource for people, a library of lifewide learning ideas, research, scholarship and practice. If people are willing to share appropriate content from their own contexts and perspectives, we believe we can further develop this online exchange. So if you believe in the need for adopting a much more holistic perspective of learning, moving beyond the simplistic measures of success in terms exam grades, jobs and skills, and that we should be valuing a much richer and diverse picture of success, embracing the notion of self, identity, value and who are we now and who we might become in the future, we would love for you to be involved.

If any of this resonates please do join us in the LinkedIn 'Lifewide Learning & Education Exchange' at:
https://www.linkedin.com/groups/4667550

Part 1
THE VERY IDEA OF IMAGINATION

MAIN FEATURE

Pragmatic Imagination:
A New Muscle for the White Water World

Ann Pendleton-Jullian

Ann is an Architect, Professor, Former Director of the Knowlton School of Architecture at Ohio State, and Architect of the Redesign and Professor of Design, Pardee RAND Graduate School of Policy and Action. She Is a world –Leading thinker and writer on designing for a complex, ecological and radically contingent and emergent world. In this feature article, Ann explores the idea of pragmatic imagination and its essential role in enabling us to engage with and navigate the turbulent white water world in which we are immersed – concepts that were first articulated in Chapter 17, "Pragmatic Imagination" in her book "*Design Unbound. Designing for Emergence in a White Water World*"[1]

a white water world

When the famous blue marble photograph was published, many of us saw, for the first time, the earth as a single sphere in space - its surface of geological distinctions and geopolitical borders blended beneath one atmosphere. Seemingly peaceful in the way it rested in space, its swirling atmosphere, however, suggested the dynamics of a world not at rest. And it foreshadowed a world of increasing turbulence. Whether you live in Los Angeles or London, Boston or Bangalore, we all share a world that is now rapidly changing, increasingly connected, and radically entangled. This is a white water world[1] – a world in which everything we do is somehow connected to everything else around it in dynamic flows of connectivity. We are in a state of hyper-connectivity that is both enabled and driven by digital technologies.

We have moved from an era of equilibrium to a new normal – an era of constant dis-equilibrium. In the past, we had punctuated evolution. Things changed abruptly and after the abrupt change, we had decades of stability that enabled us to build deep institutional models based upon infrastructural and technological shifts. And society as a whole evolved. But today's technological change and corresponding effects may not level out[2] (see Figure 1).

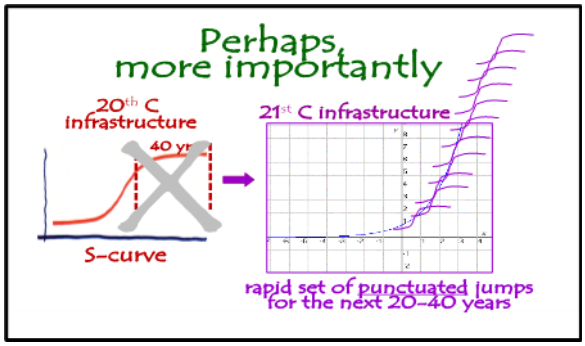


Figure 1 John Seely Brown's modelling of technological change in the 21st century[2]

We are in an era of profound change, in which acceleration, instability, and disturbance have become the new normal. In this new normal, the challenges we face are substantial, fundamental, and entangled. COVID-19 plus street protests for social justice, plus increasing homelessness, plus fires in the canyons, plus climate change, plus the economic, governmental and social impacts of all of these globally, plus . . .

This is a white water world in which all issues are interconnected. Relationships of flow, exchange and entanglement dominate,[3] creating volatility, uncertainty, complexity, and ambiguity to varying degrees for each of us.

agency and the imagination

How do we navigate this world with some degree of agency in our own lives and working on the things we care about? It starts with being able to *see* how everything is changed by the hyper-connectivity and pace of this world. Not just *that it is connected*, but more importantly, *how it is connected*. Joshua Cooper Ramo talks about the need for *a Seventh Sense*:

"The *seventh sense* is the ability to look at any object and see the way in which it is changed by connection. Whether you are commanding an army, running a Fortune 500 company, planning a great work of art, or thinking about your child's education."[4]

For the seventh sense to serve, we need to think of *seeing* as having two functions to it: seeing for understanding – seeing more, better, and faster. This is critical and we have new tools and ways of doing that. And we are building new lenses and skills that enable and empower those. The second function is seeing that which is beyond what we know or *can* know for certain. This *seeing* works *through the imagination.*

In a world that is rapidly changing, we need the imagination:

- **for improvisation to respond to new events**
- **for adaptability and resilience**

In a world that is broadly connected and with increasing heterogeneity, we need the imagination:

- **to imagine oneself in another's shoes to understand *their* motivations**
- **to help us 'see' what is connected to what and in what ways**
- **to expand our own cognitive diversity**

And in a world that is radically contingent, where problems and opportunities are contingent on contexts that are always changing, complex problems are contingent on other complex problems, and opportunities are contingent on other opportunities, we need the imagination:

- **to help us 'see' not only what is, but what *could be***
- **to help us discover unknown – undiscovered – unknowns**
- **to learn new skills and build new capacities to operate in this new era**

For agency today, in this world, the imagination is more critical than ever.[5] The unique power of the human imagination comes, in part, from its ability to integrate opposing qualities like emotion and reason, curiosity and certainty, and wrestle with diversity. It finds correspondences between things that are not obvious, or even logical, but *are* uniquely valuable. Despite the increasing need for truly imaginative thinking, we are experiencing a real *crisis of imagination*. This is due, in part, to a misunderstanding of the role of the imagination and its capacity to problem solve as well as innovate. We are not good at catalyzing it when needed, and more importantly, putting it to pragmatic purpose. The imagination is a muscle that, for many, is wasting away in a world ruled by text, data, pre-packaged images, and "easy" solution-seeking processes.

the imagination is . . .

> ***"There are imaginations, not 'the Imagination,' and they must be studied in detail."*** **William James**[8]

But what is the imagination? What do we mean when we talk about the imagination? And is it something we can call on and use more intentionally like a physical muscle? Simply defined, imagination is the power or capacity of humans to form internal images of objects and situations. These images may be visual images, auditory, or motor images.[6] In *Some Notes on Brain, Imagination and Creativity*, the cognitive neuroscientist, Antonio Damasio, talks about how the imagination relies on banked images that one recalls, brings 'on line' and then uses to create novel combinations. Banked images come "from the world outside (as one is experiencing it) or from the inside world" [7] and rely on an exchange between the two. How we interiorize what we see affects, ultimately, what we have *seen*. Experiences create images for the imagination to hold on to. But the imagination, with its propensity for playing with associations, with doing work when one is not aware of it, also creates new renditions of them. So, real world experiences seed rich image banks for the imagination to draw upon.

In this way, imagination is different than creativity. The two are often confused because generating novelty is often considered the defining criteria, and both do lead to novel things. Viewed from this perspective of novelty production, only, it is often difficult to distinguish the two. To better understand imagination and its role in our lives, we *do* need to distinguish them.

Both imagination and creativity are processes that lead to products. Both interact with the world. And they do so within the domains of society and culture. But their processes and products are different. The imagination is primarily an intra-psychological process, occurring in the brain in microseconds, and ending when a resolution between an individual's experience and the internal image formation that it calls forth, emerges – when it resolves itself into something that displays coherence – something unified. The *product* of the imagination is this coherent unified resolution of images. Remembering that images can be visual, auditory, or motor, the resolution also will be any, or include all, of these. And while we've talked about it as *a* product (singular), *a* resolution of images (singular), this does not mean to imply that the imagination works singularly. It moves. Images are not static, and images build on other images.

Creativity, on the other hand, refers to inventive, productive and intentional actions that result in the making of a product that interacts with the real world. The mental processes of creativity operate on a longer time scale than microseconds and they are in *constant implicit or explicit conversation with real world concerns*. There is much room for, and need of, imagination in the creative process but the two are not the same thing.

Having clarified what the imagination is, we can now turn our attention to how it works, how it is deployed, and how we might access it more often, more intentionally, for increased agency.

imagination as a multi-functioning spectrum of mental activity

> *"I think when I was growing up, I was dealing with a number of realities. The primary one involved being an immigrant. I moved from France to the United States when I was 7, and I had Chinese parents, which meant that I had three sets of divergent points of view broadcasting in my ears. It was very confusing. I needed to use my imagination to fill the gaps."* [9] Yo-Yo Ma

The role of imagination in the commerce between thought and action has been explored and debated by philosophers, artists, and scientists throughout the history of ideas. Seemingly illusive and undisciplined, it is held in high esteem for those endeavors associated with artistic creativity, fantasy, radical scientific discovery, invention and novelty of all sorts, while 'higher' orders of reasoning and logic are expected to carry us through our 'real' lives and work on our 'real' problems. From this position, logic and reasoning are warranted for pragmatic endeavors while the imagination is authorized to work on aesthetic and 'creative' endeavors. This counter positioning of imagination versus reasoning has been with us from classical times despite the attempts of many to expand our understanding of how imagination plays out within an entire range of mental operations. This polarization is counter-productive and scientifically unfounded. Instead, **we need to understand the imagination as a critical partner in an entire spectrum of activities defined by diverse mental processes** – processes that we use throughout our daily lives. This is the starting point for exploring the Pragmatic Imagination.

Every engagement with the world, every experience we have, has a degree of novelty associated with it whether it is the nano-new - the small differences that give texture to routine - or the fully unfamiliar that, welcomed or not, rattle the routine in our lives.

Since the advent of modern philosophy and cognitive studies, we have come to understand that the imagination serves in more ways than just the forming of internal images of non-present 'wildly artistic' objects and situations. The definition has expanded to include the capacity to form images that actually aid the *various processes of reasoning,* and even for integrating sensory data *in the process of perception,* itself.

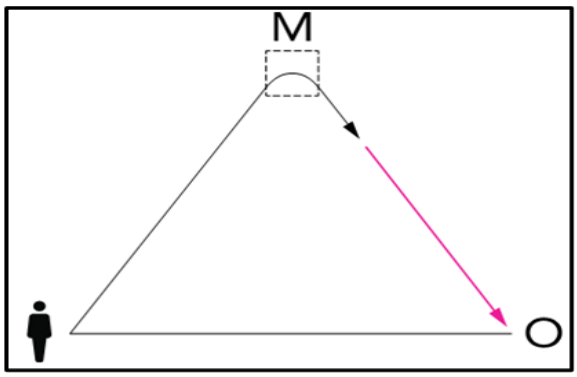


Figure 2 The way we perceive the world

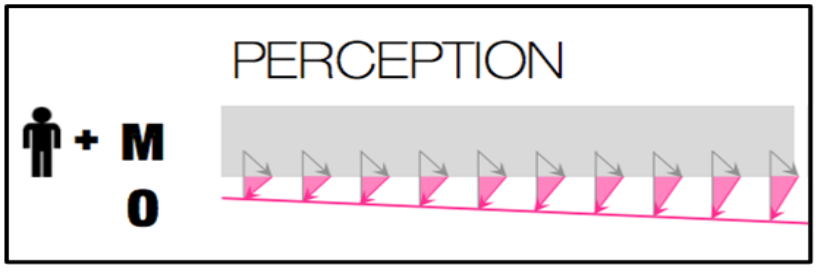
In the processes of perception and reasoning we use the imagination to close the gap between what is presented to us as new and what we know. This is how the mind assimilates novelty in the environment and learns. In 20th century cognitive psychology, there was a movement that began to recognize the importance of culture and history in how our minds process information coming from the environment.[10] Since then, **perception** has been seen as a process of triangulation between an individual in the world, the object or experience encountered, and the mediation of that relationship through cultural frames and behaviors. It can be diagrammed this way (Figure 2) where the figure is the individual, 'O' is the object or event in the world, 'M' represents the mediating frames, and the magenta line is the gap between what is new relative to the object or event and what we *recognize in* it based upon our mediating frames.

The mental images we form are not the same as what the thing or event *is*, in the world, unmediated. They are socio-cultural-biological constructs from the very beginning. What one sees, be it object or experience, is perceived through lenses that work to make sense of that object or experience in terms known to the individual, who is formed by their experiences and culture, its frames, beliefs, and behaviors. Imagination, in perception, then, is "the process of resolving and connecting the fragmented, poorly coordinated experience of the world so as to bring about a stable image of the world (through) a feeling of oneself in relation to the world." [11]

Because different people have different cultural frames and behaviors, they will perceive the same event or objects, differently. They will create unique triangulations between themselves in the world, the world, and the way in which their imaginations engage in making sense of the world, to "create a stable image." This is why 'eye-witness' accounts of a single event, without any intention towards bias, can still vary widely and even contradict each other.[12]

So, we can now see how the imagination is not uniquely about producing novelty that fuels creativity, nor is it simplistically the undisciplined counter-faculty to reasoning, but instead a means of "closing the gap" in perception even. Figure 3 is the beginning of a spectrum in which: the grey bar represents the world; the pink line represents a thing or event one encounters, increasing in degree of 'unfamiliarity' or novelty towards the right; and the pink triangle represents the imagination at work closing the gap.

Figure 3 First part of the cognitive spectrum showing how we use our imagination to close the gap between an encounter with something that is not familiar and our perceptions of the world we know and understand.



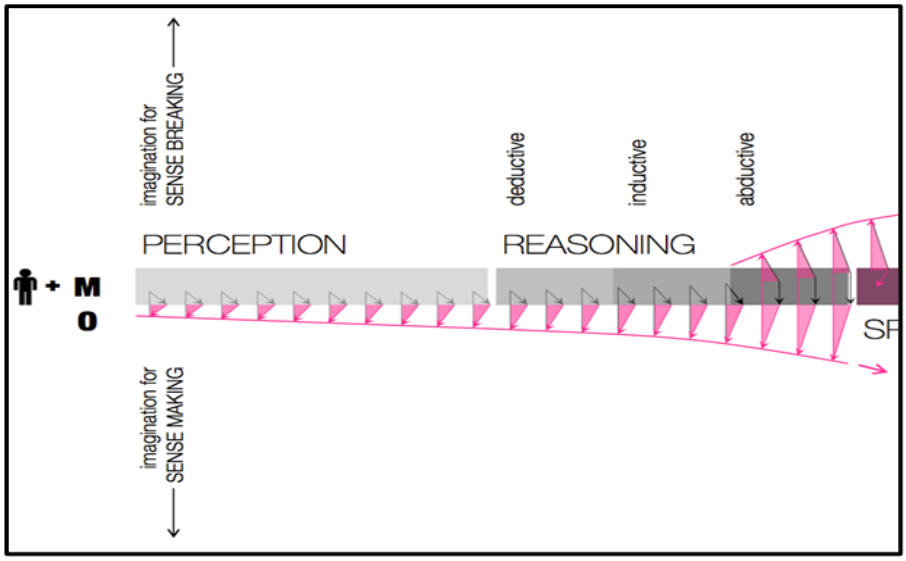
In reasoning, gap filling uses the imagination to figure out how novelty in the environment fits into the world we know, whether it is a small difference (a different brand of coffee) or monumental (the fall of the World Trade Towers in 2001). And the more extreme the novelty, the more the imagination must work in the process of reasoning. In deductive reasoning, where a conclusion follows directly from the premises presented, the gap is not large. The clues are supplied and lead to a rather direct answer. We just have to collect, sort and compare 'images' between the new and the known. In inductive reasoning, where the conclusion, while supported by the premises, does not directly follow them because there are missing pieces, where you rely on generalizations and patterns more than specifics, where the connections are less obvious/direct, the gap widens. We search for an answer by sorting through a larger database of 'images' to find the most viable answer. Instead of direct associations, we might have to employ analogy and metaphor to find correlations that explain the novel in terms of what we know.

But when circumstances are obscure, when critical pieces are missing, when the premises don't 'make sense', or when what we encounter is just stranger than we can parse quickly, then we must rely on abductive reasoning in which we have to *speculate* on *possible* answers and proceed by trying them out. Here the gap is too large to close with normal reasoning and so the imagination flips into a different mode. Instead of working to 'figure things out,' it must come up with various different, divergent – often fully novel – possibilities to work on the space of the gap.

Sherlock Holmes was a radical practitioner of this in the way he would imagine – visually imagine, not merely reason – in the space of a few minutes, divergent possible scenarios playing themselves out in his head such that when asked if he had a solution, he would always respond 'yes, seven' or 'yes, three,' meaning that he had that many viable hypothetical stories—imagined sequences of events—that he would then test against the clues available. Our fascination with Holmes and some of the more recent detective documentaries and binge-worthy shows is because they seamlessly move between a combination of rigorous observation, precise logic, and lively imagination.

When the gap is large, as one finds when abductive reasoning is required, the imagination generates novelty to fold back into the reasoning process. So somewhere within the domain of abductive logic on our spectrum, the imagination's functioning shifts from making sense of information – sense-making – to breaking away from the constraints of purely evidence-based reasoning – we can call this sense-breaking – in order to generate novel content for consideration. It widens the gap to disrupt normative thought processes and practices. It is then also employed alongside reasoning to close the widened gap so that novel content can be assimilated. In abductive reasoning, one is not using the imagination to merely connect the dots (dots, being information) but add new ones that one tries out in search of answers. Figure 4 attempts to diagram it.

Figure 4 The work of imagination in the reasoning part of the cognitive spectrum



In an interview in 1929 Albert Einstein said, "Imagination is more important than knowledge. Knowledge is limited. Imagination encircles the world." [13]

On the one-hundredth anniversary of the general theory of relativity, Walter Isaacson reminded us that Albert Einstein

often engaged in thought experiments, in which he would visualize concepts that could not yet be proven through the mathematics of physics. At the age of sixteen, he tried to picture what it would be like to ride alongside a beam of light. If he were able to do so, he later wrote, "I should observe such a beam of light as an electromagnetic field at rest."[14] Under Maxwell's equations, which describe the motion and oscillation of electromagnetic fields, this was not possible. Einstein had to break with these equations to imagine something else. Imagining – seeing – himself riding alongside a light beam led Einstein to other thought experiments, in which his imagination fed his talent and skills as a theoretical physicist, creating the theory of relativity. This is the imagination working in full speculative mode: asking "what if".

A hallmark of Albert Einstein's career was his use of visualized thought experiments (German: *Gedankenexperiment*[1]) as a fundamental tool for understanding physical issues and for elucidating his concepts to others. **Einstein's thought experiments** took diverse forms. In his youth, he mentally chased beams of light. For special relativity, he employed moving trains and flashes of lightning to explain his most penetrating insights. For general relativity, he considered a person falling off a roof, accelerating elevators, blind beetles crawling on curved surfaces and the like. https://en.wikipedia.org/wiki/Einstein%27s_thought_experiments

The speculative imagination is about stretching reasoning out beyond what one accepts as real (for now). In speculation, the imagination begins in the present, in the problems and questions reality presents. It then moves into the unknown through new possibilities it sets out to see. Speculation is about asking "what if" questions ("What if I were riding on the back of a light beam?) and then seeing what you would see if the "what if" were real.

For empathy, one asks, "what if I were that person (or thing)?" and then imagines themselves as if they were that person (or thing). The speculative imagination creatively sees/explores alternative states and alternative possibilities. It is powerful because it functions by relaxing or eliminating constraints of the situation at hand, or of reality more generally, in order to see/entertain "what-if" possibilities with the detail only the imagination can supply. In the speculative imagination, the exaggerated and fantastic get put to purpose. Figure 5 develops the key conceptual diagram into the realm of speculation.

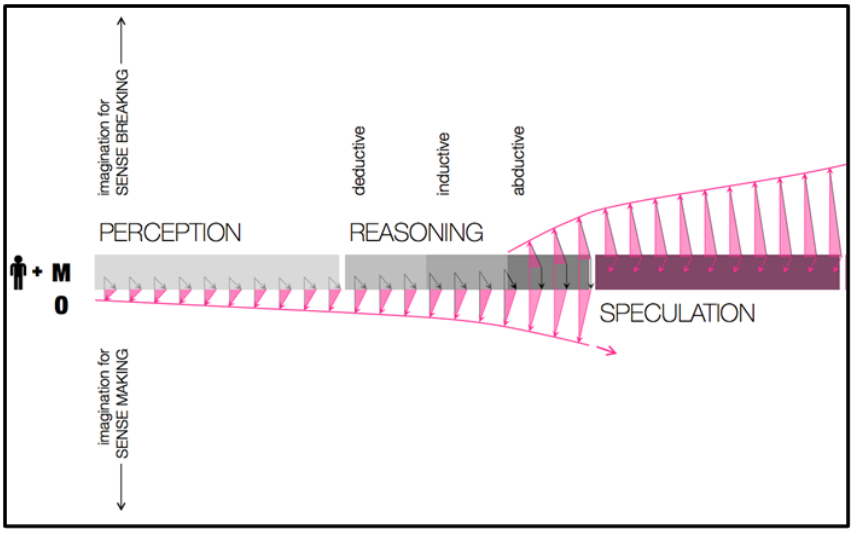


Figure 5 The work of imagination in the speculation part of the cognitive continuum

Keith Jarrett, the great jazz pianist, said that jazz is an activity well known for "trying things out in an emerging context of one's own making." One does so with not only improvisational talent, but also technical knowledge and skill: "the great irony of the (jazz) improviser's lot is that there is an enormous technical requirement to meet." He then goes on to say the more interesting thing: "yet there is also a need to transcend if not negate (the technical) in order to find something truly novel."[15] Herbie Hancock, another legendary jazz pianist and composer, said, it's "not just about playing notes. It's hope. It's courage. (When) we're improvising, we're in the moment. We don't know what we're going to play next. At its best, we are fearlessly stretching out and trying things—getting outside of the comfort zone."[16] "You're in the dark room of unknowns and you allow yourself to go there."[17] **The experimental imagination** is the dark room of unknowns that one enters with the skill of one's 'craft'.

While we easily attribute an imagination of experimentation with the arts and allied fields, it also exists in the sciences, as many introspective accounts attest. Henri Poincaré, the physicist, mathematician, and philosopher of science, experimented with combining mathematical ideas that would often "collide" in interesting ways. In one account of his experience with mathematical discovery, he speaks of a resonance of play between an inspired nonrational image-based state, and a more rational state through which details would get elaborated. Often, when focused work led to no

results, he would intentionally break off. Not thinking about the problem, he would find himself in other states in which "ideas rose in crowds, I felt them collide until pairs interlocked, so to speak, making a stable combination." [18]

These are examples of the experimental imagination in action. Remembering that images can be visual, auditory or motor, the experimental imagination is about forming images *in action*. In other words, while engaged in doing something that is driven by curiosity and fueled by an aspiration for novelty, whether it is a novel scientific solution or a piece of jazz music that dares to try something no musician has tried before. The experimental imagination works off of an individual's creative history and the domain practices of the endeavor. It is scaffolded by knowledge and skills the individual has acquired through experience. But its principal characteristic is that it pushes these into the background, holding them in tacit suspension so that experimentation can take over. The experimental imagination functions in parallel to the doing; there is a resonant back and forth between them. And both emerge in unplanned and unforeseen ways.

As an agent to experimental boundary pushing, the experimental imagination allows – demands - a wider range of play than one expects from the imaginations of perception, reasoning or speculation. Trying things out in an emerging context of one's own creating is what jazz musicians, comedians, and others call improvisation. Improvisation is the key spark for, and function of, the experimental imagination.

Following on the experimental imagination, at the far right of the spectrum is a range of imagination that is often associated with inspiration or some form of mystical intervention. This is **the imagination of free play**. Like the experimental imagination, it produces images that are unplanned and unforeseen, and it is generative in nature – it generates novelty as opposed to synthesizing sensations and information. But while the experimental imagination serves one when they are engaged in activities and skills, functioning parallel to those activities, the imagination we associate with inspiration is an imagination that often functions when one stops focused activity. It is an imagination of free play as opposed to experimental play. Experimental play is guided by the boundaries of the experimentation one is engaged in. Free play is guided by the act of playing itself, which sets its own terms as it goes along. It emerges. It surprises. Often associated with what has been characterized as the unconscious mind, it is the imagination that creates the content of our dreams.

The free play imagination is associative, mostly unconscious, mental image making. For most of us, dreams are where we experience the imagination of free play**.** The Surrealists of the mid-twentieth century, however, built an entire literary and artistic practice on finding ways to subvert the restrictions of focused thought in an effort to spark the unconscious mind and pull it into service. Instead of sitting in front of a blank canvas, a blank page, or an empty music studio, waiting for something to emerge, they developed non-prescriptive methodologies that served as vehicles for play. These methodologies included: automatic writing, wordplay, and verbal free associations; free tonal and audio associations; nonsensical analogies; improvisationally rich performances or "acts"; induced dreamlike trance states; excursions or wanderings with gratuitous or nonexistent goals; chance associations; and games – card games, word games, drawing games. All of these were highly effective mediums for free associative play that was specifically after creating a "conducting wire"[19] between the world we live in day to day, and an enigmatic dimension of that world, in which unsuspected correspondences between things allow us to see the world differently. In addition to the products produced by these methodologies, they can also be seen as 'exercises' that served to build the muscle of the imagination at the scale of the individual, but also collectively.

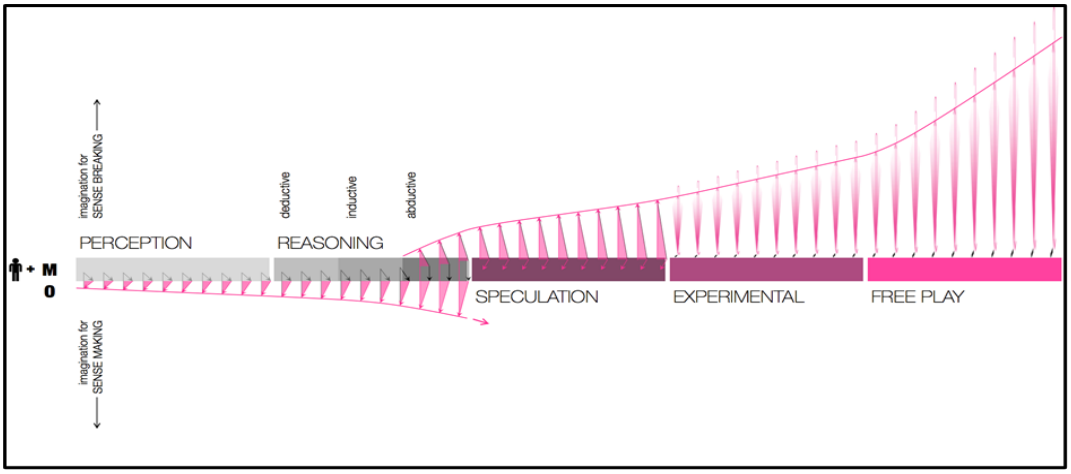


Figure 6 The work of imagination across the complete cognitive continuum including the experimental and free play domains[1]

Viewing imagination in this way shows us that imagination is not uniquely about producing novelty that fuels creativity, nor is it simplistically the undisciplined counter-faculty to reasoning, but an entire spectrum of activity associated with diverse cognitive processes from perception through reasoning *to* novelty. The gap between the new/novel/strange and known increases along the 'role of imagination in cognitive processes' spectrum from left to right from its appearance in perception, through the three processes of reasoning, to speculation, experimentation and finally the imagination of free play. Within the range of abductive reasoning, it makes a significant shift from sense-making to sense-breaking in search of novelty, surprise, and awe for play and *for purpose*.

While this spectrum might appear anecdotal and metaphorical, new advances in the neurosciences, especially with the advancement of fMRI (functional magnetic resonance imaging) practices in the area of behavioral and cognitive science research not only substantiates this but has greatly added to our understanding of when and how the imagination functions *in the brain.*[20] We can now turn more directly to what we mean by the *Pragmatic Imagination*.

the pragmatic imagination

In our working theory of imagination[1] (Figure 6), the role of the imagination has expanded from a simple imagination versus reason dichotomy to an entire spectrum of mental activity from perception, through reasoning, speculation, experimentation and then the free play imagination we associate with artistic creativity, fantasy, radical scientific discoveries, and invention and novelty of all sorts. We can easily understand how perception and reasoning, and even speculation, have pragmatic purpose and therefore the imagination associated with these would be, by nature, a pragmatic use of the imagination.

But we would like to suggest that the entire spectrum can, and should be, available and instrumentalized for pragmatic purpose, and that it is especially the generative side of the imagination spectrum – the side least constrained by practicality - the 'fanciful' side - that is most needed for agency in the world today, whether in one's own life, working on complex radically contingent problems, or for creating the kind of novelty that moves culture and society forward. 'Seeing' how connectivity changes everything. 'Seeing' hidden obstacles and barriers in the white water: 'seeing' more; 'seeing' better. And 'seeing' new possibilities in everything. Sometimes referred to colloquially as 'out of the box thinking', this kind of imagination is especially critical when the box is changing shape and size day by day.

The *Pragmatic Imagination* is a concept that proposes that the imagination is a spectrum of coherent synthetic image making that runs from dealing with the known to projecting the novel, and from prosaic sense-making to generative sense-breaking. It values the entire spectrum but suggests that the last portion of the spectrum, the domain of the generative imagination, is necessary in a world that is rapidly changing and radically contingent. And finally, it proposes catalyzing, scaffolding and instrumentalizing[21] the entire spectrum for pragmatic purposiveness.

By "pragmatic" we do not mean merely "practical." In general usage, the two are often used synonymously to refer to common sense conduct that is concerned with ordinary activities and ordinary work. While this accurately defines 'practical', it is insufficient for 'pragmatic' as both a way of acting and a way of thinking. The Pragmatic Imagination is based on a deeper and more textured meaning of the word by drawing specifically from philosophical Pragmatism, which asserted that knowing the world is inseparable from agency within it. But with the perspective/belief that every part of reality, whether thing or experience, tangible or intangible, contains within it both the actual and the possible. [22]

The pragmatic imagination as muscle

Imagination is influenced by many factors: by personal factors such as experiences and lifestyles that are intrinsic to a given individual at a given time – experiences that create rich image banks; it is influenced by an individual's preparation in terms of their capacity to use their imagination in both easy and challenging situations; it is influenced

by one's social environment; it is influenced by one's propensity for risk taking in general; and other factors.

Ultimately, the imagination is not under our *conscious control* and so one cannot just decide to deploy it. But we can make sure to build as many and as rich experiences as possible. We can work to keep an open mind – suspend disbelief more often. We can put ourselves in creative and imaginative contexts as often as possible. And we can also find ways to trick the imagination into motion through playful activities.

But, more importantly, we need to understand that the imagination is a muscle of a type. The science fiction writer Philip José Farmer said in an interview, "Imagination is like a muscle. I found out that the more I wrote, the bigger it got."[24] Both PJ Farmer and Lewis Carroll's White Queen are astute to point out that exercising and working the imagination, repeatedly, builds capacity of imagination just as physical tools build physical capacity. But using a muscle repeatedly also builds skill, dexterity and agility through repetition, feedback from the environment and correction or adjustment.

> *'I can't believe that!'* said Alice.
> *'Can't you?'* the Queen said in a pitying tone. *'Try again: draw a long breath and shut your eyes.'*
> Alice laughed. *'There's no use trying,'* she said *'one can't believe impossible things.'*
> *'I daresay you haven't had much practice,'* said the Queen. *'When I was your age, I always did it for half-an-hour a day. Why, sometimes I've believed as many as six impossible things before breakfast.'* Lewis Carroll[23]

The imagination is a mental muscle that becomes stronger the more one uses it. It becomes more agile. One develops greater confidence in what it can do and one's ability to then translate it into learning and action in the real world. In childhood, this muscle is fully activated. It is without limit and is easy to call on. A child learns by engaging the world through play, which forms a profound connection between his/her motor system, sensory system and imagination; playing with the world to understand it and see what one can do with it. Without use, the muscle of imagination can atrophy over time. As verbal and abstract thinking skills begin to dominate learning through our prescribed educational curricula, there is less and less time for many to exercise their imagination.

Therefore, when many people take a look at the "imagination spectrum" that we've drawn, they concede the role of imagination in their daily lives to a certain point. They situate themselves on it and declare a right-hand boundary, as if *their imaginations* have fixed capacity. But this is not the case. We aim to suggest that the entire range of cognitive activity is available to everyone. It's a matter of exercising it, developing greater capacity, pushing out further. In our white water world, this is so necessary; in a world that is experiencing a crisis of imagination on all fronts and at all scales from the most personal to the most pressing work on global problems – those that lie below the swirling atmosphere of our blue marble world, putting it at risk.

Notes & Sources

1 The concept of the white water world was introduced by A. Pendleton-Jullian and John Seely Brown in Design Unbound, Designing for Emergence in a White Water World (Cambridge: The MIT Press, 2018). See chapter 8, "Skills Matter", pp. 141-144. White water is intentionally misspelled to read as www, like the world wide web.

2 John Seely Brown. The diagram is his as well.

3 We have moved from an era in which "enlightenment knowledge and natural laws orchestrated fantastic chains of causes and effect in our political, legal, and economic systems . . . (and) our philosophies neatly separated man and nature, mind and matter, cause and effect" to an era "governed neither by the mysteries of nature or the logic of science, but by the magic of their entanglement." Danny Hillis in a working paper for the Center for the Advanced Studies in the Behavioral Sciences (CASBS), Stanford, 2018

4 Joshua Cooper Ramo, *The Seventh Sense: Power, Fortune, and Survival in the Age of Networks,* (New York: Little, Brown and Co., 2016), p. 36. Ramo is vice-chairman and co-CEO of Kissinger Associates, the consulting firm of former Secretary of State Henry Kissinger.

5 Twenty-five minutes into the Peter Berg 2018 movie *Mile 22* an impassioned conversation is taking place between a CIA Officer and one of his operatives in a classroom full of analysts and operatives who are on the hunt for a shipment of Caesium seized by terrorists:

CIA Officer: What?

James: (speaking about an asset) He's been accurate on everything else, John. One hundred percent. And he appears driven and motivated by something other than funding.

CIA Officer: Fix this!

James: Oh, it's going to be fixed.

CIA Officer: Every one of these events occurred as a result of failure of imagination (pointing to a white board that lists:

Pearl Harbor, Tet Offensive Iranian Hostage Crisis, End of Russia, 9/11, Paris, Nice London subway).

Your job is not to predict tomorrow based on yesterday. That's what academics do. Your job is to prevent the end of tomorrow by using your brains and your imagination. If you don't find the Cesium before it's too late, you will be held responsible for the single largest intelligence fumble since a flight instruction school in Florida failed to grasp the significance of a 19 year old Al Qaeda terrorist saying he didn't need to learn how to land.

6 For some people these images may be predominantly visual. For others, auditory or motor images may populate their thinking. How one creates and mixes different kinds of images is a function of propensity. In *Principles of Psychology 2* (1890, Chapter 16, Memory), William James says: "The visual, the tactile, the muscular, the auditory memory may all vary independently of each other in the same individual; and different individuals may have them developed in different degrees. As a rule, a man's memory is good in the departments in which his interest is strong; but those departments are apt to be those in which his discriminate sensibility is high. A man with a bad ear is not likely to have practically a good musical memory, or a purblind person to remember visual appearances well. . . . It is obvious that the machinery of memory must be largely determined thereby."

7 Antonio R. Damasio, *Some Notes on Brain, Imagination and Creativity* in K.H. Pfenninger and V.R. Shubik, Editors, *The Origins of Creativity,* (Oxford: Oxford University Press, 2001), pp.64-65.

8 William James, *The Principles of Psychology 2,* (New York: Dover, 1950), p. 50. from Steven Fesmire, *John Dewey and Moral Imagination*

9 Yo-Yo Ma quoted in Joan Anderman, "Yo-Yo Ma and the Mind Game of Music," *New York Times,* October 10, 2013.

10 This work was pioneered by the Russian psychologist, L.S. Vygotsky, known for founding the cultural-historical vein of cognitive psychology.

11 Etienne Pelaprat and Michael Cole, "Minding the Gap: Imagination, Creativity, and Human Cognition," in *Integrative Physiological and Behavioral Science,* 2011 Dec. 45(4), p. 399.

12 There are actually many factors that can contribute to inaccurate eye-witness accounts in extreme events, but in situations where these (stress, emotional state, influence of others around you, etc.) are not present, one still sees varying accounts.

13 Albert Einstein in "What Life Means to Einstein: An Interview by George Sylvester Viereck", *The Saturday Evening Post,* October 26, 1929, 117. The full quote: "I am enough of the artist to draw freely on my imagination. Imagination is more important than knowledge . . . "

An expanded version of it appeared later in: Albert Einstein and George Bernard Shaw, *Einstein on Cosmic Religion and Other Opinions and Aphorisms* (Mineola, New York: Dover Publication, 2009), 97. (Originally published, New York: Covici-Friede, Inc., 1931) "Imagination is more important than knowledge. For knowledge is limited, whereas imagination embraces the entire world, stimulating progress, giving birth to evolution. It is, strictly speaking, a real factor in scientific research."

14 Walter Isaacson, "The Light-beam Rider," *New York Times*, Oct. 30, 2015. http://www.nytimes.com/2015/11/01/opinion/sunday/the-light-beam-rider.html?_r=1, accessed November 1, 2015.

15 Keith Jarrett in an interview with Kevin LeGendre, "Keith Jarrett—the fine art of extra-sensory improvisation," *Independent*, 27 (November 2009).

16 Herbie Hancock interview in *Esquire Magazine*, October 27, 2014, just before the release of his new memoir, *Possibilities*.

17 Herbie Hancock in an interview by Joy Williams in *Jazz Forum*, February 1988.

18 Nancy C. Andreasen, *The Creative Brain: The Science of Genius* (New York: Penguin Group Plume, 2006), 43.

19 André Breton, French writer and poet, known best as the co-founder, leader, and principal theorist of surrealism used the metaphor of a 'fils conducteur' ('conducting wire') in the mind that finds correspondences and analogical coherence between seemingly unrelated things and phenomenon.

"L'oeil ne saurait être fait . . . pour inventorier comme celui des huissiers ou pour jouir d'illusions de fausse reconnaissance . . . Il est fait pour jeter un linéament, pour faire passer un *fil conducteur* entre les choses d'aspect le plus hétérogène. Ce fil, de toute ductilité, doit permettre d'appréhender, en un minimum de temps, les rapports qui enchaînent, sans solution possible de continuité, les innombrables structures physiques et mentales. (Breton, *Le Surréalisme et la Peinture,* 1925-27*,* pp. 199-200 with Breton's italics.)

"The eye cannot have been made . . . for inventorying, like that of the bailiff's, or for enjoying false illusions of recognition . . . it is made for throwing a line, for passing a conducting wire between things of the most heterogenous aspect. This ductile wire will make it possible to apprehend, in a minimum of time, the relationships which link (double meaning: enchain), without any possible solution of continuity, the innumerable physical and mental structures." (Breton is very difficult to translate with the full fidelity of his unique semantics and word play. Translation by A Pendleton-Jullian.)

20 For specifics see A. Pendleton-Jullian and John Seely Brown, Pragmatic Imagination, chapter 19 in *Design Unbound* (MIT Press., 2018), throughout but principally within pp. 401-409.

21 For more specifics on this and some examples, see Ibid., Pp 423-430, 431-435.

22 For elaboration, see Ibid. pp. 420-424.

23 Lewis Carroll, *Through the Looking Glass and What Alice Found There (1871),* in M. Gardner, *The Annotated Alice,* (New York: W.W. Norton & Co, 2000), p. 199.

24 P.J. Farmer interview: see the official Philip José Farmer homepage "Interviews": http://www.pjfarmer.com/intervp.htm.

Design Unbound. Designing for Emergence in a White Water World
MIT Press 2018

Ann Pendleton-Jullian and John Seely Brown
two volume set

Volume 1: Designing for Emergence Volume 2: Ecologies of Change

Expert Opinion

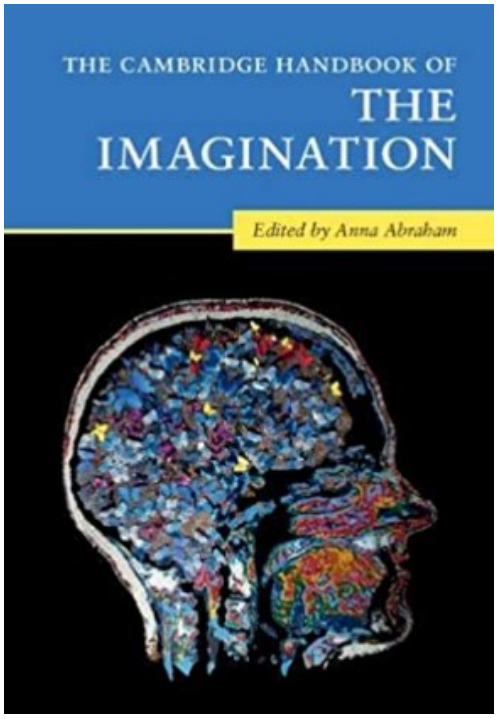
Anna Abraham is a leading authority on imagination. She is the E. Paul Torrance Professor for Creativity & Gifted Education and the Director of the Torrance Centre for Creativity & Talent Development at the College of Education in the University of Georgia (Athens, USA). Anna's research interests include Creativity, Imagination, Reality-Fiction Distinction, Mental Time Travel, Theory of Mind, Self-Referential Thought and she weaves together the domains of Neuroscience, Cognitive Psychology, Neuropsychology, Clinical Neuroscience, Social Neuroscience. Her numerous publications include editorship of The Cambridge Handbook of the Imagination (Cambridge University Press). We invited Anna to offer her views on two questions.

Q1 Why should educators and educational institutions pay more attention to the development and use of imagination in higher education? What is its role in learning? Is there something about the world we are living in and progressively creating that demands our education systems pay more attention to its development?

The imagination allows us to see beyond the confines of our present reality and to venture into the unexplored space of possibility. Educational systems the world over are largely directed at understanding the 'what was' and 'what is' of the world. This is of great value of course. But it is also necessary to nurture our capacity to engage with the 'what if' realm. If we want positive change, real progress and good outcomes for all in any area of human enterprise, we need to engage our imaginations to consider alternatives to the known, contemplate new possibilities, engage in novel problem solving, and generate creative solutions.

Q2 What advice would you give educators on nurturing learners' imaginations so that they might sustain themselves over a lifetime of learning in an increasingly complex, hyperconnected and turbulent world?

The imagination leads to the known and the unknown - be open to where it takes you. Use the imagination to find common ground and to come to terms with differences. See the imagination as a free and fun space to improvise and explore in an open-ended manner.



Semantic Memory as the Root of Imagination

Anna Abraham and Andreja Bubic

Anna Abraham (left) is the E Paul Torrance Professor in Creativity & Gifted Education and Director, Torrance Centre for Creativity and Talent Development in the Department of Educational Psychology in the Mary Frances Early College of Education University of Georgia.
Andreja Bubić (right) is an Associate Professor at the University of Split. She is a cognitive psychologist and she holds a PhD from the University of Leipzig and a post-doctoral training from Harvard.

> **"Imagination is what makes our sensory experience meaningful, enabling us to interpret and make sense of it, whether from a conventional perspective or from a fresh, original, individual one. It is what makes perception more than the mere physical stimulation of sense organs. It also produces mental imagery, visual and otherwise, which is what makes it possible for us to think outside the confines of our present perceptual reality, to consider memories of the past and possibilities for the future, and to weigh alternatives against one another. Thus, imagination makes possible all our thinking about what is, what has been, and, perhaps most important, what might be."**
> Nigel J. T. Thomas [cited in 1. p. 47]

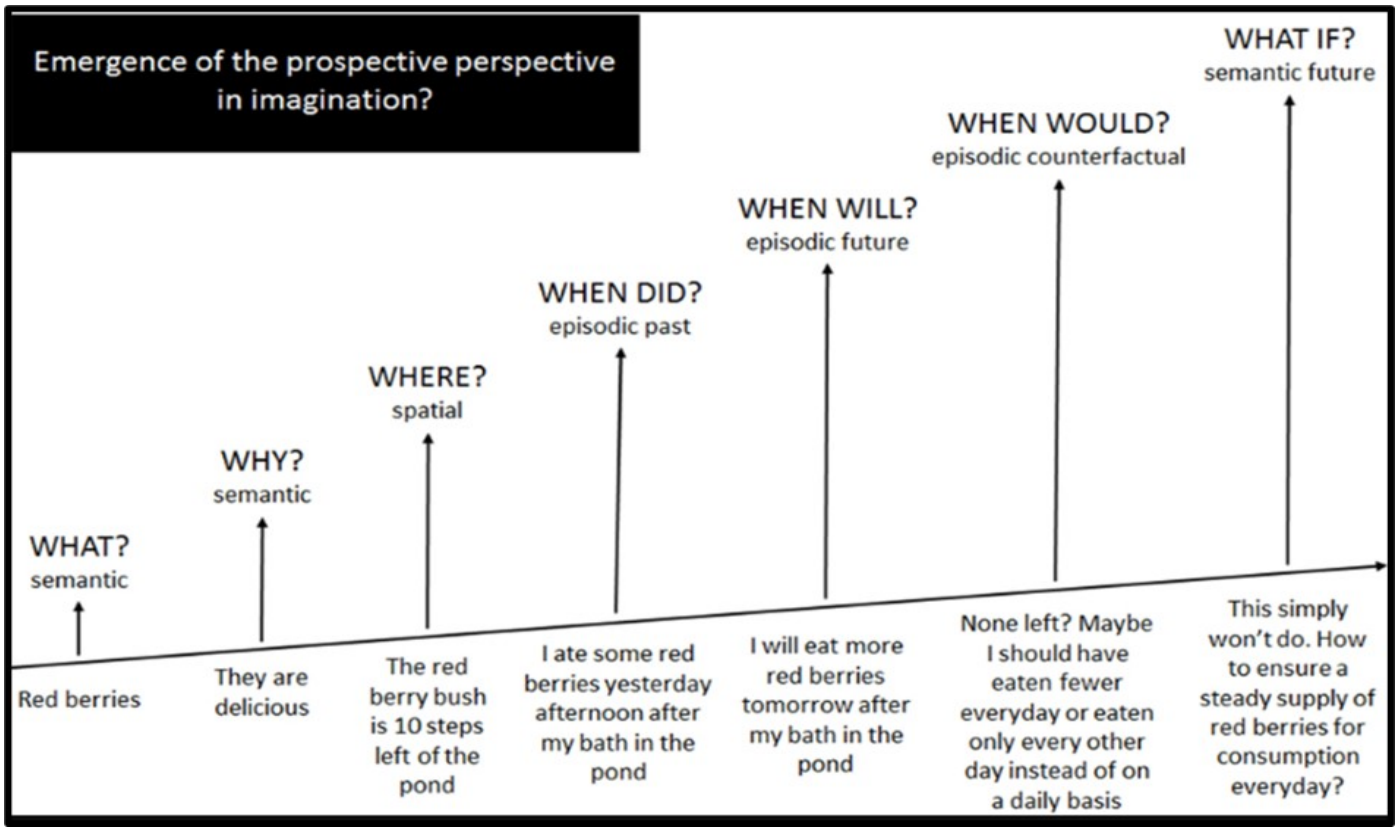
Holistic view of imagination

Investigations of the information processing mechanisms that underlie imaginative thought typically focus on a single branch of imagination, such as prospection, mental imagery or creativity, and are often generalized as being insightful to understanding the workings of imagination in general. In reality, however, there is very little in the way of theoretical or empirical exchange between the scientific communities that conduct research within the different domains of imagination. As a result, the research impetus in each of the sub-domains may be skewed to the pursuit of hypotheses that are not particularly viable in terms of understanding imagination as a whole. An example of this is pegging the roots of imagination to the processes of episodic memory—a reasonable assumption to make based on studies of episodic prospection. However, the associated findings and theoretical conclusions that follow are not entirely consistent with the literature on the mechanisms underlying creativity[2], which is another core realm of imagination.

In an effort to promote interchange across the frontiers of imagination, in this Opinion Article we put forward the idea that all aspects of imagination emerge from semantic memory with increasingly higher-order levels of imaginative information processing emanating from and interacting with existing systems, eventually expanding beyond these to form new systems (Figure 1). We compare the associated neurocognitive findings and assumptions in terms of their fit with current knowledge in other fields of imagination and discuss their implications for reformulating hypotheses regarding imagination as a whole.

Semantic memory is one of the two types of explicit memory (or declarative memory) (our memory of facts or events that is explicitly stored and retrieved). Semantic memory refers to general world knowledge that we have accumulated throughout our lives. This general knowledge (facts, ideas, meaning and concepts) is intertwined in experience and dependent on culture. Semantic memory is distinct from **episodic memory**, which is our memory of experiences and specific events that occur during our lives, from which we can recreate at any given point. https://en.wikipedia.org/wiki/Semantic_memory

Figure 1 An informal illustration of how imaginative processes emerge from and expand beyond semantic memory operations



The What?

Our conceptual knowledge of the world is the foundation from which all imaginative thought emerges and, as such, constitutes "the what-system" within the information processing hub. Investigations of the manner in which concepts are acquired, represented, stored, and accessed fall within the field of semantic cognition. The brain networks that underlie the what-system include modality-specific sensory and motor systems as well as multimodal or supramodal regions within the inferior parietal lobe, middle and inferior temporal gyri, fusiform and parahippocampal gyri, inferior frontal gyrus, dorsomedial and ventromedial prefrontal cortex and the posterior cingulate gyrus[3-5]. Such insights have emerged from neuroscientific investigations into the brain basis of semantic memory, semantic aspects of language processing, and the organization of conceptual knowledge in the brain.

The What–Where?

Determining the location of any object or person relative to oneself, some other person or object is only possible by accessing representations of spatial information such as direction, orientation, distance and position of that object or person. Such information is coded by means of reference frames relative to the observer (egocentric) and independent of the observer (allocentric)[6]. Tasks of spatial memory and navigation have shown that medial temporal lobe structures such as the hippocampal formation, parahippocampal gyrus, entorhinal and perirhinal cortices as well as medial parietal regions, such as the retrosplenial and posterior cingulate cortices[7-9], are critically involved in spatial information processing. Others tasks of spatial cognition, such as perspective taking, have indicated the involvement of additional regions within the posterior parietal cortex, particularly the inferior parietal and temporo-parietal areas [10,11].

The What–Where–When?

An event is defined as a specific happening (what) that occurs at a certain place (where) and at a given time (when). During retrospection we access events from our personal past (episodic memory, autobiographical memory), whereas during prospection we contemplate events that could unfold in our personal future (episodic future thinking). Both fall within the umbrella concept of mental time travel [12]. Neuroscientific evidence has consistently revealed that the brain network that is engaged when we imagine

personal events in the near or distant future overlaps considerably with the network that is activated when we ponder our episodic or autobiographical past [13-15]. Regions that comprise this brain network include the ventral and dorsal medial prefrontal cortex, retrosplenial and posterior cingulate regions within the medial parietal cortex, anterior lateral temporal cortex, inferior parietal cortex, and medial temporal lobe structures such as the hippocampus. Notably, the regions of the mental time travel brain network also closely correspond to those of the brain's default mode network (DMN). The DMN is active under conditions of rest and low task load, and is held to reflect processing demands associated with mind-wandering, internal mentation and stimulus-independent thought [16] . DMN brain areas are also involved in other facets of higher order cognition, like mental state reasoning or theory of mind, moral cognition, and self-referential thought [17,18] all of which involve reasoning about one's self and/or others.

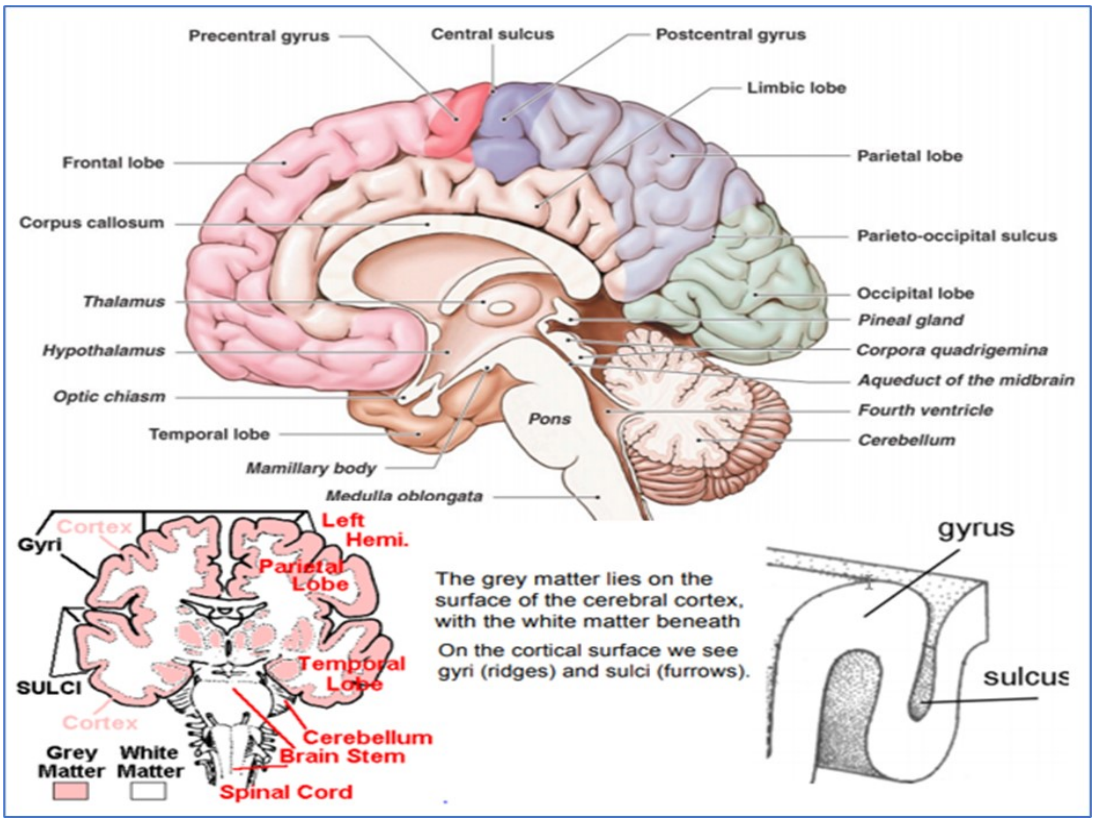


Figure 2 Important structures in the brain http://fsnagle.org/files/EssentialsOfBrainAnatomy.pdf

The What-If?

Our capacity to imagine possibilities is virtually unconstrained. Investigations on the information processing circuits involved in prospection address the question of “what if?” or “what might be?” within a specific temporal context of our personal lives (which covers the aforementioned episodic prospection of the what–when–where system). However, our cognitive capacity to explore hypothetical possibility spaces is neither limited only to our personal lives nor to any temporal factor (past/present/future). Other operations that fall under the category of what-if or hypothetical reasoning based cognitive processes include semantic prospection, semantic or episodic counterfactual reasoning and creativity. In addition to the partial conceptual overlap between the what-if system and the previously discussed what-where-when system, the two also share common underlying neural mechanisms. Although only a few neuroscientific studies have investigated semantic prospection or the propensity to think about the non-personal future, the limited evidence indicates that semantic prospection is reliant on similar parts of the brain's episodic mental time travel network, particularly with reference to the engagement of anterior and dorsal medial prefrontal regions, inferior parietal cortices, the hippocampus and related medial temporal lobe structures [19,20].

In contrast to semantic prospection, which is relatively unrestricted with regard to the types of imaginable alternatives, counterfactual thinking primarily involves exploring possibilities that are contrary to what has already come to pass. Research on brain correlates of counterfactual comparisons and emotions that often accompany such cognition, such as regret, indicates a key role for the orbitofrontal and ventromedial prefrontal cortices [21]. Furthermore, studies that have assessed episodic past, episodic future and episodic counterfactual thinking have reported a common brain network, involving the hippocampal formation, temporal lobe structures, lateral parietal regions as well as medial and lateral prefrontal areas. Within the episodic cognition domain, counterfactual thinking recruits some of these areas more strongly than past and future thinking, and also additionally engages the bilateral inferior parietal lobe and posterior medial frontal cortex [22].

Semantic prospection and counterfactual reasoning are concerned with hypothetical reasoning linked to the future and the past, respectfully. However, one can also engage in hypothetical reasoning within temporally unspecific contexts such as those involving moral and mental state reasoning, which, as pointed out earlier, strongly overlap in terms of their implicated brain network with the what–when–where system [17]. While the contexts tapped in such hypothetical reasoning operations are decidedly social in nature, a non-socially based avenue within which we necessarily exercise our capacity to think hypothetically is that of creativity.

Our capacity to be creative is examined by assessing the extent to which we are able to generate original and relevant responses to a particular end [23, 24]. The underlying brain mechanisms of creative cognition are very complex[25]. Brain regions such as the dorsal and ventral medial prefrontal cortex, retrosplenial and posterior cingulate cortices as well as medial temporal lobe structures are strongly engaged during divergent thinking, or the generation of multiple responses in an open-ended situation [19]. This indicates that there is a considerable overlap in the neural correlates of divergent thinking and that of the what–when–where network. While divergent thinking certainly involves hypothetical reasoning and exploration of an abstract possibility space, it does not necessarily translate to creative thought. Having constraints on divergent thinking pushes the information processing system to be necessarily creative (both original and relevant) and this leads to the additional activation of the semantic cognition and cognitive control networks with the major contributions being provided by brain regions such as the inferior frontal gyrus, temporal pole, frontopolar cortex, and basal ganglia. So the neural correlates of the creative cognition system overlap only partially with those associated with other aspects of the imagination system, with common activations seen in the dorsomedial prefrontal cortex and inferior parietal lobe (the what–when–where system) as well as the inferior frontal gyrus (the what-system).

Integrating the disparate systems of imagination

In this Opinion Article, we explored the view that processes of imagination — the “where” of spatial cognition, the “what-when-where” of episodic retrospection and prospection, and the “what-if” of semantic prospection, counterfactual reasoning and creative thinking — emerge from a foundation provided by the “what” of semantic memory operations. The evidence thus far clearly indicates that the many processes of imagination, which have mostly been systematically investigated in isolation from one another, are neurally implemented in substantially overlapping brain networks and are also similar with respect to their underlying cognitive algorithms and mechanisms. This resonates with other proposals that have highlighted that semantic and episodic cognitive operations and their related brain systems are dynamically interlinked [26,27], as well as with recent calls for de-emphasizing the episodic or autonoetic aspects of future oriented cognition and advocating the central role played by semantic memory in the same [28,29].

This does not mean that all imaginative processes are to be considered “atemporal” per definition. Many forms of mental time travel as well as counterfactual thinking patently involve the consideration of temporal factors as a core facet of the imaginative process. In taking this a step further, it may even be argued that such processes are necessarily linked to the brain's predictive systems due to the fact that they involve the generation of estimates concerning events that reliably unfold over a certain period of time, albeit with differing levels of certainty[30]. This position has rarely been considered in the literature on imagination-relevant operations but it would fit with a number of suggestions that posit prediction as the fundamental mechanism that modulates our general neural and cognitive processing[31,32].

So, although the issue of temporality is undoubtedly relevant, the more fundamental basis that underlies all of the aforementioned processes is the reliance on our experiences with the world, its objects and events. We therefore suggest that if the aim is to develop a comprehensive information processing model of imagination, the foundational elements should be discussed in terms of semantic memory operations. As semantic memory involves the abstraction of content from experiences that are specific to sensory, motor, or affective modalities, conceptualizing the processes of imagination as stemming from semantic operations allows for a more seamless integration of its theoretical models with that of the wider research realm of perception, action and cognition where concepts such as embodied cognition and predictive processing are revolutionizing our understanding of psychology.

We hope these ideas will stimulate future research and the development of novel paradigms as well as critical scientific exchange between the research communities involved in understanding different aspects of imagination. Some questions can be already anticipated such as the "chicken-and-egg" problem within which it appears impossible to clearly substantiate what came first, or concerns about how to reach a consensus about what can be considered an underlying foundational element. Through the process of this discussion though, we hope that building blocks and essential frameworks will be uncovered that will guide us through the incredibly rich world of human imagination.

Footnotes

1. ^http://archive.today/www.imagery-imagination.com or http://www.co-bw.com/BrainConciousness%20Update%20index.htm

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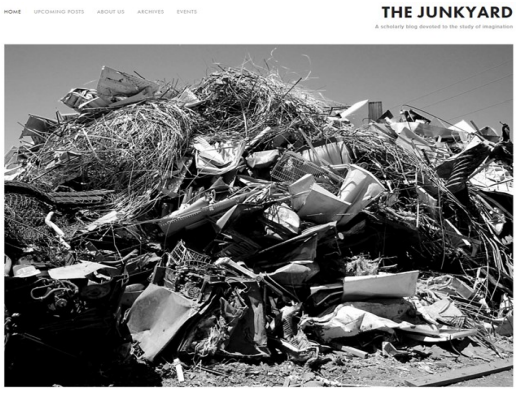
Welcome to the Junkyard
Amy Kind

Amy is the Russell K. Pitzer Professor of Philosophy and Director of the Gould Centre for Humanistic Studies at Claremont McKenna College. She is the editor of two collections on imagination, Knowledge Through Imagination (co-edited with Peter Kung) and The Routledge Handbook of Philosophy of Imagination. She has also written a short introductory textbook, Persons and Personal Identity (Polity Press). She is also Editor in Chief of the scholarly blog devoted to imagination called the Junkyard that is full of interesting and informative articles.



https://junkyardofthemind.com/

Speaking at a session at the 2015 meeting of the Pacific Division APA, Noel Carroll referred to imagination as "the junkyard of the mind" – a place where everything gets thrown in. Need something to explain our engagement with fiction? Enter imagination. What accounts for our ability to access modal truths? Again, enter imagination. Pretense. Mindreading. Empathy. Thought experiments. Creativity. Delusions. Dreams. Metaphors. Sure, let's throw all of those onto the imaginative scrap heap as well – a heap that seems to be getting higher and higher.

This same junkyard is also littered with attempts to understand the nature of imagination. Historically, imagination has played a central role in the work of philosophers such as Aristotle, Descartes, Hume, Kant, Sartre, and many others, though their pictures of imagination tend to differ, often dramatically, from one another. Likewise, in late 20th/early 21st century philosophy we have seen attempts to understand the nature of imagination offered by philosophers of art/aesthetics, philosophers of mind and cognitive scientists, and epistemologists, and here too the pictures can often be quite divergent from one another. What is the role of mental images? How does imagination relate to belief and to perception? How should we understand the difference between imagination and other speculative mental capacities such as supposition and conception? What is the difference between objectual and propositional imagination, and is one of these forms of imagination more fundamental than the other? Though there are various points of agreement about what imagination is and what it is not, on many of these questions no clear consensus has yet emerged.

That said, to our minds, it would be a mistake to consign imagination to the scrap heap, or to write it off as unsalvageable, and in fact, recent explorations into imagination have proved to be both rich and fruitful. The success of this recent research suggests that we could benefit considerably from continued investigation into imagination and, in particular, from the kind of exploratory, collaborative, and quick-moving kind of investigation that can flourish online. We know that the blogosphere is already crowded, and we also recognize that there are several terrific blogs – blogs that we greatly admire – that occasionally feature posts on imagination. (Here we have in mind especially the philosophical blogs Brains and Imperfect Cognitions, and the psychological blog On Fiction.) But given the increasing number of philosophers and academics in cognate fields to whom the imagination is of interest, we've decided that the time is ripe for Team Imagination to carve out space for a blog of our own.

For now, The Junkyard will feature new posts every other Wednesday, with the first one going up on Wednesday, April 5. We have a great series of posts already lined up for the next six months, and we expect to be adding more names to the list very shortly. As we do so, we'll likely transition at some point soon from a biweekly schedule of posts to a weekly schedule. Interspersed around the Wednesday posts, we will also be featuring occasional symposia, author-meets-critic sessions, interviews, conference reports, and so on. Though the majority of our initial set of contributed posts will be philosophical in content, we intend for The Junkyard to be an interdisciplinary blog, and we're already at work soliciting contributions from scholars in other academic disciplines – from psychology to religion to legal studies. We very much welcome suggestions for posts and features. If you have an idea for a post, or would like to contribute one yourself, please contact us at junkyardofthemind@gmail.com.

Editor The Junkyard website is a treasure trove of informed philosophical reasoning and writing about imagination and it certainly should be included in any curated collection of resources concerned with imagination. I have selected just one of the posts to illustrate.

Imagination and Hypothesis Generation

Joshua Myers

Joshua is a philosophy PhD student at New York University. He is primarily interested in philosophy of mind, epistemology, and cognitive science and is currently writing a dissertation on the nature and epistemology of the imagination. This post was made on April 15, 2020 in the Junkyard blog.

Peter Medawar, in his "Advice to a Young Scientist," writes that *"every discovery, every enlargement of the understanding, begins as an imaginative preconception of what the truth might be. The imaginative preconception—a "hypothesis"—arises by a process as easy or as difficult to understand as any other creative act of mind; it is a brainwave, an inspired guess, a product of a blaze of insight."* [1p.84]

Medawar gets things exactly right. The imagination plays a crucial role in hypothesis generation: to form a hypothesis is to imagine a way the world could be. Despite being highly intuitive, and despite many scientists, like Medawar, explicitly stating that they use their imagination to come up with hypotheses, this view has received surprisingly little philosophical attention. In this post, I'll motivate the imaginative account of hypothesis generation, explicate some of the mechanisms by which the imagination plays this epistemic role, and briefly speculate about norms on hypothesis generation.

Although the word "hypothesis" is most at home in discussions of the scientific method, humans form hypotheses all the time. For example, suppose you hear a loud thump outside the door to your apartment. You might immediately start wondering about what caused such a loud noise. Could it have been the neighbours who live down the hall slamming their door? Perhaps someone has just rather clumsily delivered the package you ordered a few days ago. Or, maybe your neighbour's cat has once again managed to sneak out of their apartment and knock your potted plant over.

The weakness of the hypothetico-deductive system, insofar as it might profess to cover a complete account of the scientific process, lies in its disclaiming any power to explain how hypotheses come into being. [1]

As this scenario illustrates, humans are prolific hypothesis generators. Immediately upon hearing the loud noise, and with very little effort, you have already generated three plausible hypotheses about its cause, which will then go on to guide your inquiry. Both science and our daily lives are rife with similar examples.

Hypothesis generation is puzzling because it has two contrasting features. It is simultaneously inventive and informed. Hypothesis generation is inventive insofar as it involves the construction of novel ideas. **Hypotheses represent possibilities that one may not have ever considered before. Furthermore, hypotheses are constructed and not learned. One does not generate hypotheses by gaining new information about the world, but instead by considering various ways the world might be.** Upon hearing the thump, you don't hypothesize that it was caused by your neighbours slamming the door because this conclusion is supported by your evidence. You form this hypothesis precisely because your evidence massively underdetermines what the cause could be, and you need to consider the various possibilities.

Hypothesis generation is informed insofar as prior information constrains which hypotheses are generated. Although hypothesis generation involves considering various ways the world could be, one does not simply consider possible states of the world willy-nilly. For example, upon hearing the loud thump outside of your door you would not usually hypothesize that an elephant or an alien caused it. Instead, your hypotheses are informed by your evidence. Although we often form hypotheses that are false, we do not usually form hypotheses that are outrageous, absurd, or wildly implausible.

The fact that hypothesis generation is both inventive and informed puts constraints on a plausible account of hypothesis generation. On one hand, beliefs are a bad model for hypothesis generation because they fall towards the informed end of the spectrum. One cannot construct new beliefs at will precisely because beliefs are highly informed by one's evidence. On the other hand, a random idea generator is a bad model for hypothesis generation because it falls all the way on the inventive end of the spectrum. A random idea generator might be able to construct lots of new hypotheses, but they will almost all be extremely implausible since they are in no way constrained by one's evidence or the target of one's inquiry. Thus, a theory of how humans generate hypotheses must locate a cognitive process which is capable of being both inventive and informed in the right way.

Imagination is a faculty that can be inventive and informed in just the right way. **Imagination allows us to generate representations of indefinitely many possibilities that we have never considered before. Yet, imagination can also be informed. I can constrain my imagination in various ways in order to limit the space of possibilities that it represents. The fact that imagination has both of these features is reason to think it is well-suited for hypothesis generation.**

Constraints have been widely invoked in the epistemology of the imagination in order to explain how imaginings are capable of justifying beliefs [2,3,4]. If the imagination is constrained to accurately represent the actual world, one can use it to test hypotheses and form justified beliefs about the actual world. I propose that constraints on the imagination also allow us to generate hypotheses in the first place, thereby elucidating an overlooked epistemic role that they play. There are a number of hallmark constraints on hypothesis generation that can be implemented by the imagination.

First, people tend to generate hypotheses that are possible given their evidence. Of course, after formulating a hypothesis one may very well go on to encounter evidence which contradicts it. But, in order to play their role in guiding inquiry, hypotheses must be left open by one's evidence at the time that they are formulated. For example, you would not hypothesize that the neighbour's cat caused the thumping noise if you already had excellent evidence which ruled this out.

Second, people tend to generate hypotheses that are likely given their evidence. This is stronger than the previous constraint. The hypothesis that an elephant caused the thumping noise does not contradict your evidence. However, your evidence makes it exceedingly unlikely, and it would be a waste of time to pursue inquiry into whether there is an elephant in your hallway. This makes it useful to constrain one's imagination via your evidence about what is likely. Notice, however, that the probabilistic constraint still leaves plenty of room for inventiveness. The threshold that determines which hypotheses count as likely given one's evidence may depend on contextual factors. But in most ordinary contexts, it will be low enough that many hypotheses will count as likely given one's evidence, and thus allow for many hypotheses to be generated.

Third, people tend to generate hypotheses that meet certain explanatory desiderata. These come in two kinds. First, there are general explanatory virtues. These include parsimony, causal adequacy, explanatory depth, and others. For example, when imagining what might have caused the thumping noise, one will tend to imagine simpler scenarios, and one will tend to imagine things which could conceivably cause a thumping noise. Second, sometimes the nature of the target of inquiry suggests constraints on a satisfying explanation. For example, children tasked with explaining what causes a continuous variable to change over time tend to hypothesize changes in other continuous variables as the cause, as opposed to changes in discrete variables[5,6]. In this case, the continuous nature of the explicandum, instead of general explanatory virtues, puts substantive constraints on what a satisfying explanation will look like.

To sum up: imagination is well-suited to play the role of generating hypotheses. It has all the properties that one would expect the capacity underlying hypothesis generation to have. Imagination is a genuinely inventive capacity which is capable of forming indefinitely many novel representations. Nevertheless, imagination is capable of being constrained such that those novel representations can be informed by our evidence and explanatory desiderata. Thus, there is good reason to think that imagination is the mechanism by which we form hypotheses about the world. I've further motivated and elaborated this view by explicating some of the specific constraints which are operative on imaginative hypothesis generation, but this is a fruitful area for further work.

Let me conclude by briefly noting a potential normative implication. It is commonly thought that, while there are norms governing which hypotheses we ought to believe, there are not norms governing how we ought to generate hypotheses in the first place. Nevertheless, the imaginative account shows that hypothesis generation is not an inexplicable "blaze of insight," but rather a process that is responsive to evidence and is subject to constraints This suggests that one can implement those constraints in ways that are either well or poorly suited for guiding inquiry, and thus that there are norms governing this process. Intuitively, it would be irrational to generate hypotheses by imagining scenarios which contradict one's evidence, or which are highly unlikely given one's evidence, or which would have very little explanatory value. In these cases, it is natural to think that one ought to have constrained one's imagination in different ways in order to generate hypotheses better suited for guiding inquiry. If this is right, then there are norms governing how we ought to generate hypotheses and, by extension, how we ought to imagine.

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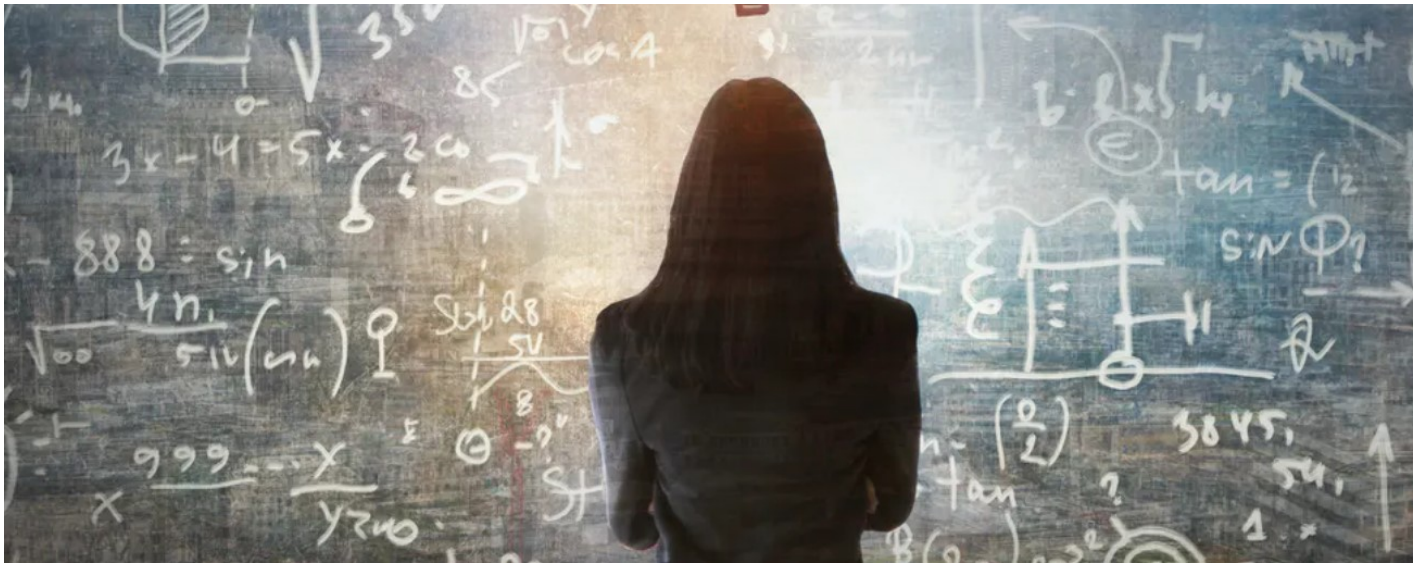


whereas the sources of artistic inspiration are often communicated – they "travel" – scientific creativity is very much private. Scientists, he claims, unlike artists, do not share their tentative imaginings or inspired moments, but only the polished results of complete investigations. [1]

Part 2

LIFELONG

IMAGINATION

LIFEWIDE

A Day in the Life of My Imagination
Norman Jackson

Norman is Emeritus Professor of Higher Education at the University of Surrey and Founder of Lifewide Education and Creative Academic. He has long standing interests in creativity, learning through whole of life and the ecology of learning and practice. His latest book with Ron Barnett "Ecologies for Learning and Practice" offers a range of perspectives on these ideas.

May 27th 2020

I had been thinking about a recent discussion on Zoom that Gillian Judson (GJ) had facilitated and the three questions I had been asked to answer after the event. To be honest I didn't find the questions all that engaging. For me the best questions are those that challenge and make me delve into my own understanding about something and enable me to explore something in the context of my own life and experiences. I decided to share my concern with GJ suggesting that the starting point for any discussion about imagination should be: 'how do we actually use our own imagination?' *"If we were to take any day and think about how we used our imagination during the day - from the moment we opened our eyes to the moment we had our final thoughts of the day.. what would it look like?"*
Gillian thought it was a good question and invited me to write a post for ***imaginED blog.*** What follows is the story of three moments on the following day when I recorded how I used my imagination. This a shortened version of a long post I wrote for the imagined blog.[1]

May 28th

Scene 1 : Thinking ahead – exploring possibilities in the day ahead

It's just after 6am, although I am not aware of the time as I emerge from sleep. I begin to become aware – the lightness and freshness in the room, the window has been open and it's a little chilly. I can hear the birds singing outside, the distant sound of traffic on the road, and movements in the corridor - my wife I imagine.

As I lie semi-aware I start to think about some of the things I will or should do today. I would like to continue with the work in the garden I had begun yesterday – I pictured the area of dead bushes I had taken out and imagined continuing to cut them back, dig out the roots of bramble, add some nourishment to the soil and put down grass seeds. I pictured grass growing where weed-infested, twig-strewn bare ground now lies and felt a little surge of motivation to continue my project.

As my mind began to clear I remembered I am participating in a zoom conference this evening and imagined what it might be like from my past experiences of zoom events. I also visualised the background paper I have to read and the things I have to do to join the event and began to reason when I might do this.

A more immediate concern came into my mind. I have to transfer some money to my brother in Australia and it has been a bit of a rigmarole. I tried to do it over the phone yesterday but lacked some information, I know he would have sent it so I imagined myself making this transfer online.

Another 'concern' came into my mind – I have twin grandsons and it's their 8th birthday in 2 days. Their parents are buying them a Nintendo Wii console. I had promised to buy them a game which I had ordered on Amazon. I am hoping it will arrive today but I don't have a birthday card so I started thinking about where I might buy a card. Under normal circumstances we would throw a birthday party for the family at the weekend but we are still in lockdown, so I imagined going to their house for an hour and sitting in their garden eating some birthday cake.

My thoughts then turned to my youngest daughter who is returning to her workplace after 8 weeks working from home during the Covid 19 lockdown. She had lost her accommodation during the crisis and I am helping her look for new accommodation. I had spent several days off-and-on looking at AirB&Bs but so far she had not booked anything. We had whittled it down to two possible hotels for the first week – one much nicer but considerably more expensive than the other and I tried to see the two possibilities from her perspective imagining what the hotels might be like from the descriptions I had read and the respective journeys to work. Alongside my visualisations I could see my reasoning working away to try to work out what advice I might give her.

Perhaps 10 mins had elapsed since I began to wake up and by now I am fully awake and so I get out of bed and began the routines I practise everyday. While brushing my teeth I reflected on the first few minutes of my journey to awareness and realise that even this mundane, nothing special story of a few minutes in my life illustrates just how important and valuable my imagination is to my sense of who I am and to my engaging with my contexts and purposes.

Anecdote: *It was lunchtime and I was having a sandwich in the garden with one of my daughters. I asked her 'how did she use her imagination in ordinary everyday settings'. Immediately she volunteered, "I use it to help me get out of bed in the morning". It transpired that she did exactly what I did in my opening scene to think ahead and build pictures of what she was going to do that day and to help her plan what she might do once she had the* ***picture*** *in her mind (I noticed she used the word picture). We talked about other things, but I thought it was interesting that the first thing that came into her head was also the first thing that came into my consciousness that morning.*

Scene 2 : Visualising and implementing change

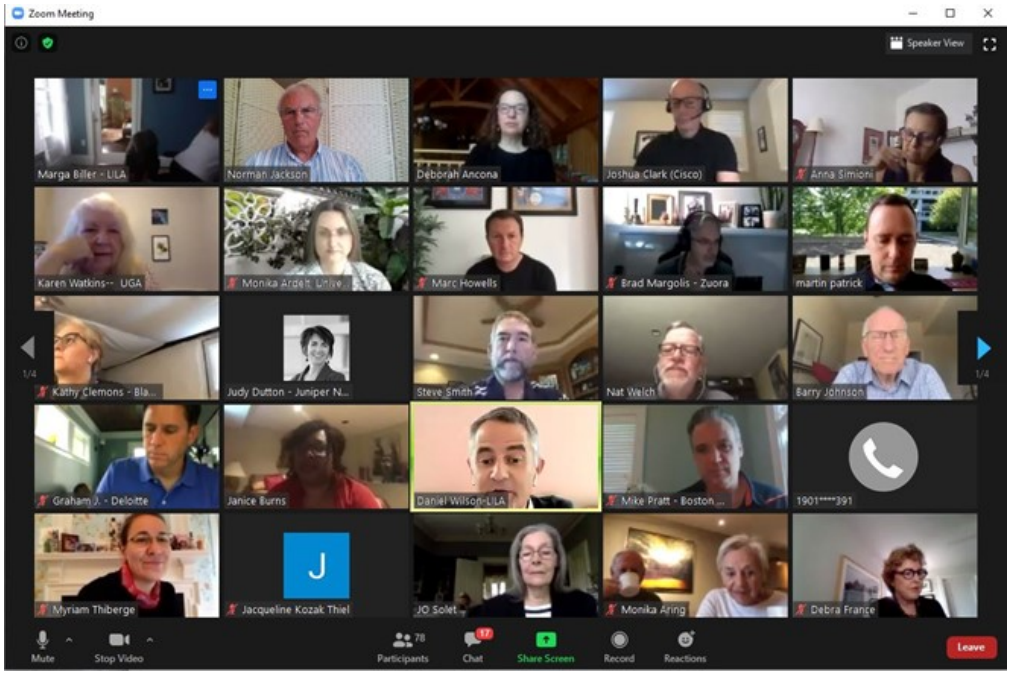
I did indeed get into the garden later in the day to continue what I had started the day before. It was hot and sweat dripped off my forehead as I dug up brambles and other weeds, and cut off dead branches from the conifers before hauling them away for burning. As I toiled I kept thinking about what this much neglected patch of garden might look like in a year when I have levelled the ground, enriched the soil, grown grass and perhaps landscaped it with ferns.

I kept *visualising* a Japanese garden with its twisted conifers and stones. Each time I was about to make a significant cut on the tree I tried to visualise what the tree would look like after I had made the cut. As I was working, I remembered I had a pile of wood chippings that I can use under the trees. An image of the pile of wood chips at the bottom of the garden came into my mind to give substance to the idea.

The image enabled me to see the possibility of using the chips in the change I was trying to bring about and when I had finished my cutting and weeding I did indeed lay down a layer of wood chips under and around the trees. The thought of improving this little patch of long neglected ground motivated me to press on. After a few hours of effort I saw the difference I had made and it made me feel positive about what I was doing. I am sure that this feeling will sustain me and encourage me to continue transforming this part of the garden. *[Note added 6 weeks later – I have just completed my project of transforming the whole drive. Each part I completed enabled me to better imagine what the next step might look like but it all began with the imaginings and actions I described above].*

Scene 3: Exploring ideas – making new meaning

My third snapshot of how I used my imagination on May 28th is related to my work. I am participating in a year-long inquiry organised by the Learning Innovations Laboratory (LILA) in the education faculty of Harvard University on the theme of learning ecologies. Last October I helped facilitate a two day event in Boston and tonight is the first of two zoom summit events when participants meet to consider the outcomes from the year long inquiry. I had been sent a briefing paper to read and a link to a video I was expected to watch, so I spent a chunk of the day reviewing the materials. I jotted down a number of points before identifying a potential theme and imagining by sketching onto a piece of paper, how I could connect or synthesise these points into a bigger and more meaningful picture.



The zoom event included a one hour keynote presentation by Ann Pendleton-Jullian and John Seely Brown (two of my favourite thinkers). Their talk was formed around the idea of hyper-connectivity (the infinitely complex interconnectedness and entanglements of people, things, events, wicked problems) that creates a 'white water world' full of uncertainty, turbulence, instability and disruption, and how this context requires us to design organisations and our own engagements with the world in new (ecological) ways. What emerged was a powerful exposition of the importance of human imagination in working with such complexity and the need for humans to develop abilities in abductive reasoning in order to create missing pieces of information in complex informational jigsaw puzzles 'by imagining and exploring what could possibly be?' My exposure to these ideas reinforced my belief that these thinkers make an overwhelming case for educational systems to make the development of 'imagination' and abductive reasoning a central concern.

As I tried to absorb the information I was being given I became excited by the idea of "seeing [imagining] how an object can be changed by connections."[2] Through my imagination, I related this idea to the idea of affordance – opportunities to act and to the idea that unique individuals with unique imaginations working in unique contexts see/find unique affordances in the world that has meaning to them. A small but significant insight for me in my ongoing exploration of the idea of 'learning ecologies'.

Making sense of my pragmatic imagination

May 28th was no different to many other days in my life. A lot of mundane stuff happened together with one out-of-the-ordinary event. But looking back it was a day in which I used the gift of my imagination to visualise how I might engage with or change my world, myself and my family and then use these thoughts as a motivator and guide for action. At that time I did not know that what I did on that day was an important trigger for this issue of the magazine!

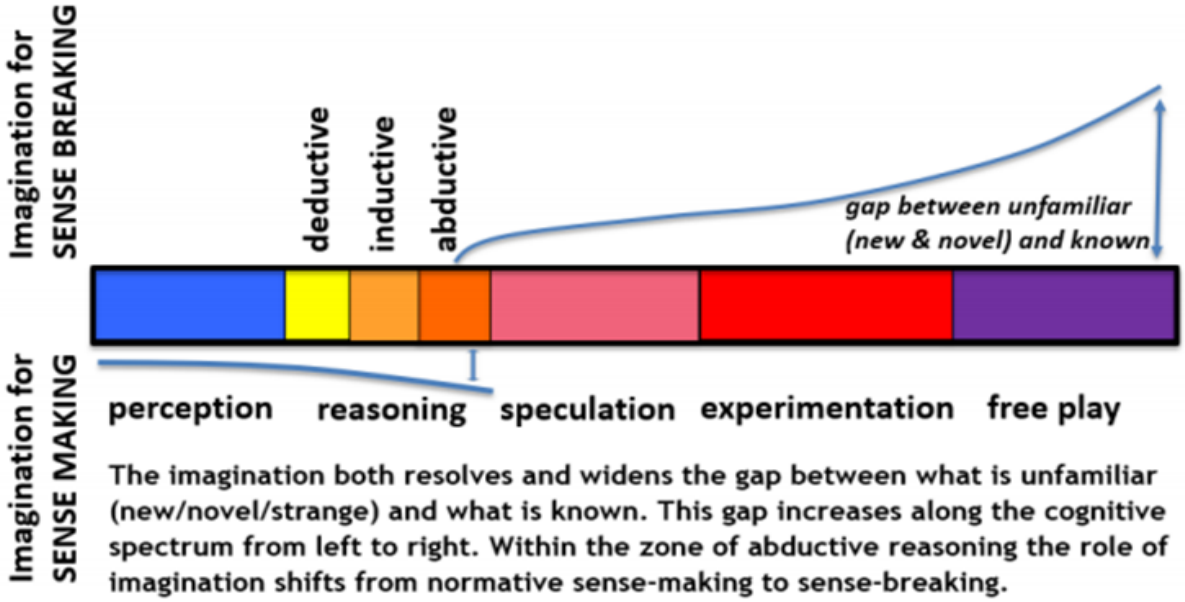
I recently came across an interesting article on the neurobiology of imagination in which the way the authors frame the idea of imagination makes perfect sense in the context of my day in the life experience.

"The distinctive feature of imagination…… rests on its capacity of creating new mental images by combining and modifying stored perceptual information in novel ways and by inserting this information in a subjective view of the world: hence it is related to [our] self-awareness. In other words, imagination is not simply the organization, identification, and interpretation of sensory information in order to represent and understand the environment but rather a constructive process that builds on a repertoire of images, concepts, and autobiographical memories and leads to the creation (and continuous update) of a personal view of the world, which in turn provides the basis for interpreting future information. Summing up it could be proposed that imagination represents the ability [to] create[e] novel "mental objects" that are shaped by [our] own ….inner world.[3 p2]

A few years ago, I read a book 'Pragmatic Imagination'[4] by Ann Pendleton-Jullian and John Seely Brown, that changed the way I understood the idea of imagination. I used their concept to try to make sense of my day in the life experience without knowing that Ann would later provide the main feature for this issue of the magazine.[5]

The concept of pragmatic imagination theorises that imagination works with perception and reasoning to enable us to think about things and situations from many different perspectives, including perspectives that have never existed. It is the productive entanglement of cognitive and psychological processes – perception, reasoning, imagination, beliefs, values and emotions, that enables us to respond in our unique ways to our unique circumstances through the creation of mental images and models about things that only exist in our thoughts. They illustrated their idea through a diagram that provides a powerful visual aid to understanding the complex relationships and dynamics involved in thinking and I have used this on several occasions to try to understand the relationships between thinking and action where imagination and creativity are involved[5,6].

Figure 1 The cognitive spectrum[4,5] : imagination interacts and works with perception and reasoning in a pragmatic way to tackle the problems and concerns, and exploit the opportunities our unique individual worlds have to offer.



The concept of pragmatic imagination is a tool that can be used to help us think about events and situations that occur in everyday life, like waking up as described in my day in the life narrative. In thinking about my experience of waking up I can see how the dynamic portrayed in the diagram emerged as I became more aware of myself and my life. While simply lying in bed I could draw on memories of past doings and invent visual representations and manipulations of possible futures to entertain myself and enjoy certain feelings, but also to engage in planning my immediate future by thinking about the everyday problems, concerns and opportunities the situations in my life afforded and considering the possibilities for different actions.

My imagination helped me explore a world that has meaning to me without me being physically involved in the situations I was imagining. When it was integrated with perception and reasoning it enabled me to explore and make sense of possibilities and make decisions about what I might or should do. For example, as I was waking up (scene 1 in my narrative) I imagined the situation in which my daughter is searching for a place to live near where she works. I have been helping her and I used my imagination to put myself in her shoes so to speak, to visualise the choices she had and see the world through her perspective in order that I could give her more useful advice.

I also used my imagination it to 'see the possibilities of changing an object by connection'[7] namely, the affordance provided by the half-dead conifers to transform this neglected patch of garden into a place that is aesthetically more valuable. As I cut the branches I was conscious that I was picturing in my mind how it would look after I had taken the branch away: I was performing a mental simulation of a future possibility[2] - a simulation that guided what I actually did. Looking back on this act I sensed my imagination was participating in an act of creative self-expression as I tried to change the object in ways that were visually more appealing. I could see the difference I was making as I enacted my vision and this feedback made me feel good. This feeling of positively encouraged me to do more and two days later I built a rockery close to the trees and planted some small juniper bushes to create a mini landscape that was consistent with my image of a Japanese garden.

Finally, in scene 3 of my narrative, I experienced an example of using my imagination to explore and see patterns in information and ideas to reach a sort of synthesis (a novel configuration of ideas) that provided me with questions for further inquiry. This process continued in the production of this artefact - an act of creative self-expression in its own right, and in the productive entanglement of perception, reasoning and imagination that enabled me to see and use the affordance in my story to understand what my imagination means and to share my sense making through my post on the imagineED blog.

Concluding remarks

Sometimes the most ordinary situations and experiences in life can reveal important truths and insights. Through my story recording some of the ways in which my imagination emerged and influenced my actions on May 28th and beyond, I have tried to show how important our imagination is to who we are – our being and our becoming. Our cultures and everything we have made in them are the product of imagination connected and related to perception and reasoning, and enacted in ways that give meaning and substance to imagined thoughts. So when asked a question like, *why should education be concerned with nurturing and developing the imaginations of learners* – the simple answer is that without their imaginations they cannot function as creative, empathic, caring and productive human beings and neither can our human civilisations. If imagination and creativity are so important to human flourishing from the level of individuals to whole societies then our educational systems need to be reconfigured to reflect this profound truth. If we want learners to make a positive difference to their world, to create new value and transform it in *yet to be imagined* ways, we need them to use and develop their imaginations not only in the context of their academic programmes but in the multitude of contexts from which their life is formed. This supposes that our education systems will be founded up on a lifewide concept of learning, developing and achieving[6,7] and we will universally recognise the importance of the educational domain in encouraging the development and use of imagination and creativity.

Notes and Sources

1 A Day In The Life of My Imagination (Part 1, Part 2 & Part 3) imagineED blog June 2020 available at: http://www.educationthatinspires.ca/page/2/

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A Day in the Life of My Ecoimagisystem
Josefina Ramirez

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The multiple roles and layers of my life

Life, it seems to me, is made up of different roles and we might imagine it as a series of "layers" or compartments in which we develop, grow, question, answer, create and solve problems. Our involvement in these multiple compartments can feel exhausting, when we engage in several parallel activities during a day. But, on the contrary, I deeply enjoy fulfilling many different roles!!

Figure 1 Snapshot of me in my ecoimagisystem, embracing my multiple roles - university teacher, school leader/ parents /team, family - wife / mother / dog carer, lover of nature and learning all of which stimulate and inspire my imagination and enable me to grow and develop as a person.

- As a university lecturer: planning and preparing lectures, and developing and guiding my early years student teachers through very active sessions, with an important portion of emotional containment and practical experiences, which hopefully will lead each one of them to understand and develop the curriculum they will teach.
- As head of a preschool nursery team: planning the institution´s academic year, the professional development for each one in the team, as well as building meaningful and supportive relationships with families, and creating new ways to keep a sustainable and consistent curriculum. This role has been challenging in the pandemic context as the very existence of the institution has been threatened. The forced distance learning for early years learners has prompted a number of families to abandon the project, and it has necessitated a complete "rethinking and remodelling " of the curriculum, while keeping its appropriateness, to give families the support and service they need in this unusual context.
- As a family member who shares the role of head with a partner, and with two young adults already working while living at home. This is my central and most relevant role, and it means keeping a warm, safe, fun, cosy, tranquil retreat, which will promote and be the "rich soil" for the happiness of those living and working at home. I realise we spend and share lots of time together, becoming a highlighted role.
- On a personal level, there is also the layer of me as a creative person, who loves beauty and seeks it, making, decorating, creating, playing guitar, singing, knitting, reading, cooking and organizing spaces and objects.
- The final layer of me is a nature admirer who needs close and permanent contact with nature animals and plants to find meaning in life, and appreciate and love creation.

Each of these layers inspire and enable me to fulfil my imagination EVERY DAY! But… they do not behave as separate compartments. The more roles and areas I develop and "spend time at ", the more they intertwine and "peak" at each other. This perspective of me and my life is similar to that offered through the concept of lifewide learning[1] which recognises that most people, no matter what their age or circumstances, simultaneously inhabit a number of different contextual spaces – like work or education, running a home, being a member of a family and or caring for others, being involved in one or more communities, and looking after their own physical, mental and spiritual wellbeing. We live our lives in this multitude of spaces each with its own temporal rhythm for the activities we perform so the timeframe of our lifelong journey and the multiple spaces, places and timeframes of day-to-day existence across our lives, intermingle and connect and who we are and who we are becoming are the consequences of this complex intermingling of experiences and making our own sense and meaning of life. These different spaces also provide affordances for our imagination and creativity. So the spaces that provide the contexts for our life enable us to create the meaning that is our life and develop the roles, purposes and values that motivate or inspire us to lead a certain sort of life.

Impact of the pandemic on my imagination and creativity, in each layer or role

As I always have tried to work from home, I have tried to fulfil multiple roles and purposes in the same space, which has probably helped the process of feeding each role from the other. In the past months, this feeling of one role feeding another has increased during the pandemic because of being confined to my home. I have a feeling that my creativity and imagination have also been enhanced in this time. A need to renew and create in my school, with my pupils and their parents, at university with my students, as leader of my professional team, and in my role at home. All these roles have stimulated my imagination and resulted in a particularly creative period in each of these "compartments", as they have been filled with new or reorganised content.

For example, I had to imagine and create new ways to fairly and validly evaluate learning in a distance teaching and learning mode with university students, and promote their deep understanding in their teaching training. I have had to imagine and then create new ways to engage, guide and create relationships with small

with children through zoom sessions, while closely working hand in hand with their families. After a day of working with these new challenges, it might be expected that I would want to rest and recharge myself for the next day. What I discovered was the energy of imagining, creating and achieving of new ways in these layers, has ignited my imagination and creativity in other layers of my life. There have been many times when I have used the ideas I had in one aspect of my life to generate new things in another area. My need for gardening, walking and playing with the dogs, redecorating and reimagining spaces at home, cooking, knitting and creating videos for a new way of "zoom" celebrations, have exploded.

Thus, during this time, I have created new more personalised evaluation systems at university, while creating a stronger bond with families at the school I lead as main associates in their children's learning. All while redecorating at home, using new recipes, and routines with my family and my dogs. All the above has enriched the relationships and dynamics, leading all the involved to be more satisfied and happier. We have had the chance to evaluate the course at university, evaluate parents and team experiences, as well as have long conversations as a family, and they all concur in liking what they have experienced and evaluating things positively.

The more one area has been "invited" or "forced" to come up with new solutions, other compartments in my life have also followed the invitation! The one stimulates the other so I have no memory of the time in which I have reorganised, created, painted, knitted, cooked, made things for my home and for personal use, as much as we have during these months; and no memory of the challenges and demands on my time to create new ways to deliver lectures, engage students and their families, in a short time. These things are woven together as I grow and develop.

My ecoimagisystem

I needed a word to describe this holistic way in which my imagination pervades all aspects of my life so I invented "ecoimagisystem" to try to capture the way in which my imagination is both inspired and serves all the different roles, contexts and activities I am involved in every day. We are ecological beings and we live out our lives in an ecological world inhabited by other organisms and things. My image of how a day goes by for my imagination, or as it is stated in the title, my ecoimagisystem, looks more like the image of a wild garden: elements, bugs, plants, seeds, soil, colours, smells, lights and textures co-exist not only in balance, but as a living ecosystem in which I also participate. My imagination is a main engine of this ecosystem (my ecoimagisystem) and it allows and enables every aspect of me to permeate and relate to the other, growing together and entangling with each other.

Most people would agree that to become successful and creative you must become a specialist in something, narrowing down to a specific area of expertise. But I see a higher and deeper flow of creativity and happiness in the idea of a universal person, who develops and grows by integrating all aspects of their life through their imagination, each aspect "feeding" other aspects in the way I describe in my own life. In fact, I wonder and like to imagine, which new roles and contexts, will enrich my future and how they will become part of my ecomagisystem and those that I have the happiness to share life with…

Beauty, imagination and life therefore develop simultaneously because every specimen in the garden, grows and develops pushing the others, seeking its own light coming from the sun; sometimes one disappears behind another, and in other seasons they explode and grow over others in balance. Each element seeking its own spotlight.

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Image credit: https://favim.com/image/4545533/

Good Morning Imagination
Holly Warren

Holly works an Atelierista in an International school in Milan, Italy, and holds an Honours Degree in Fine Art from the University of Hertfordshire. She does research in Visual Arts, Creativity, Teacher Education and Primary Education. Her current project is The Wandering Mind, loose strings of creative thought and ideas. She is the creator of the Think Tank an environment that empowers children's creativity in the early and primary years which celebrates their ancestral creative drive and digs into the power of thinking. For more info on the Think Tank and Holly visit www.hbfwarren.com & http://www.educationthatinspires.ca/2019/11/25/the-think-tank-environment/

"Good morning Imagination"

"Good morning to you. Did you make heads or tails of what we have just created?"
"Or do you refer to the dream we have just travelled through?"
"Yes, and all that we have and are putting together, combining, connecting and…all the loose ends we are weaving."
"Heads or tails?" "It seems more like a skein, a loom of threaded memories, thoughts, and concepts."
"Well yes, so it seems, but heads and tails give it a sense of being alive and mobile, in need of care, nourishment and shelter."
"True there are so many ways of describing it and they morph so often. Love the dynamism. We work so well together."
"Yes, we do we are well connected thanks to all that we collect, gather and collate."
"Let's get to work then."

Imagination[1] - a faculty of the mind which forms and manipulates images. Manipulating, changing, morphing combining and creating. Imagination whispers to us like the wind that moves chimes making them sound creating melodies that flow through us and resonate with our quest of finding who we are. It sings, it screams, it falls asleep and sometimes snores, it covers and unveils, it never stands still. We spend most of our lives in the neural pathways between what our senses collect and how we respond to them.[2]

My imagination is part of me, it is the genius, the daemon, the interpreter of reality that rings and sings by my side. At times it is silent, sometimes it talks, often it nudges me and wakes me up. I trust it but always ask it questions and place my doubts. When I connect with it, I let it flow, smile, laugh and embrace it. It knows where we are going better than I.

Carl Sagan[3] once said that imagination will carry us to worlds that do not exist but without it we go nowhere. Nowhere is impossible because as time moves so do, we and there is no such thing as nowhere. We are always somewhere; in our mind, in time, in a state, in a place inside ourselves interconnected.

These recent surreal times have given me the opportunity to listen to the sound of silence and make these considerations:

Today, tomorrow or yesterday?
Where am I? Or rather where is time?
Does it go round and round or does it move in a line?
What do we mean when we say, can you tell the time?"
Are we standing still or are we moving?

What if everything around us moves and we are standing still. I can see, smell, touch, hear and taste uncertainty or rather choice of what, where and why. Nature moves in harmony, it takes its time, reflects, evolves, and demonstrates. Its voice is the wind, the rain, the sound of waves and rivers, the explosion of a volcano, if waterfalls and the silence is snow falling...if only we could learn more from it with reverence and awe knowing it has been around longer than we have and has learned many more lessons than we have.

Maybe the sound of silence means so much more.

Is human silence the beginning or the end of our journey? This meditative journey flowed into Threading Emotions and Weaving Reality (Warren[4], inspired by the Theory of Constructed Emotions[5]). Emotions are built around our contexts. We weave reality . into our fabric of group consciousness. The brain, which is a mighty machine composed of an elaborate system, is a slate on which we build our interpretation of our environment. It allows us to store an infinite amount of information and interpret in a myriad of ways where no one way is correct but accepted and stored.

"We don't need one universal mind, with one set of universal concepts, to claim that we are all one species. All we need is an exceptionally complex human brain that wires itself to its social and physical surrounding, ultimately producing different kinds of minds." [5]

Every day, over a period of 10 days I observed my hands at work while my imagination spilt during mind wandering. Paper, scissors and glue came to life as a soothing meditative soundtrack I chose from my meditative playlist comforted the messages of sirens mingled with the chirping of birds.

The pandemic has created a unique context for our imagination and creativity. Dartnell[6] recently wrote that the lockdown has tested people's creativity where the crisis has encouraged us all to cultivate our creativity unlocking it from our imbedded routine that has been uprooted and reinvented.

A day, a time and a moment. How can we measure these in terms of creativity? Creativity flows, in and out, up and down over hurdles and under disguise. When we decide to share our experiences, we open a door to our collective imagination and get in touch with others. It becomes a window of opportunity that inspires and nurtures hopefully reaching out allowing us to listen to the sound of silence and time.

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Stretching and Growing Imagination: A conversation between two imaginers

Marta Ockuly and Tamara Doleman

Marta is a humanistic psychologist, creativity researcher, educator and influencer whose focus is re-imagining the way imagination-informed creativity is defined and understood moving forward. She is also C.E.O. of the Creative Potential Institute offering training and coaching programs for building student and educator creative confidence. Marta earned her MSc. in Teaching for Creativity at I.C.S.C. in Buffalo, NY and her doctorate at Saybrook University under the mentorship of Dr. Ruth Richards as well as Dr. Natalie Rogers.

Tamara is the Head of Visual Arts at Ashbury College in Ottawa, Canada, and a passionate K-12 art educator of close to 20 years. She completed her MSc. in Creative Studies at I.C.S.C. SUNY Buffalo State. She has been recognized for her work in art education by the Ontario Art Education Association. Tamara is a practicing art-maker, certified yoga instructor, a loving wife and a busy mother of two teenage boys.

Marta

This narrative began when I reached out to fellow creativity educator and International Center for Studies in Creativity alumna Tamara Doleman. Her work as an innovative art teacher in Canada came to mind the instant I read about Lifewide Education's Call For Action: 'The Work of Imaginations' Project. We agreed to step into a conversation sharing our emergent views, perspectives, and experiences relating to imagination in the classroom.

The first story I shared with Tamara related the way I worked with students to 'stretch' their imagination. Even though imagination is at the core of my understanding of creativity, a significant percentage of students in my higher ed "Awakening Creativity" course reflected a disconnection with both imagination and creativity. These students self-identified as 'not creative' and revealed imagination was not part of their daily experience. I asked if they ever worried. Worry is something every student in my classroom could relate to. When I explained worry as 'negative imagining' and creative imagination as 'positive pretending' interest was sparked. We then spent time exercising imagination by thinking of a 'worry thought' and following this 'negative imagining' with five positive pretendings. Try it. It is harder than it sounds. In the first 'positive imaging' I suggest: "Close your eyes and imagine you have just received a wonderful offer for a 'dream job'. What do you imagine it will involve? Will you work from home or report to an office? Where is it located? What do you love most about this position? What is your starting pay?" Next, the students were invited to open their eyes and take a minute to jot down notes about what came up in that imagining. After a minute or two, the second 'positive pretending' prompt suggested: "Close your eyes and imagine that after getting the first offer, you get a call from another organization letting you know they were willing to double the 1st offer. Use your imagination to take a leap and supersize your last imagining." After a minute, record the highlights of that imagining. The 3rd prompt invites students to: "Imagine a third job offer that doubles the last one along with additional personal and vacation time." After a minute, invite students to record the highlights of that imagining. The last step is asking the students about their process and if imagining got progressively easier or harder? Most, in my experience, find it harder. Why? Because stretching imagination takes practice. I 'assign' homework that involves taking a real-life worry and recording 5 progressively more positive possible outcomes and writing a journal reflection about that process and the feelings and/or resistance they notice in their body and mind. After practising 'positive pretending' most students report they are applying this process to more and more situations. Students who practiced 'imagination stretching' also reported enhanced self-identification with both imagination and creativity.

During the COVID lockdown, instead of expressing my creativity more, I find my practice of creating collages has slowed down dramatically. Why? My first thought is feeling my energy is 'off'. The weight of being home bound, alone, for the past 4 months has negatively impacted my motivation and energy. My usual practices of taking beach

and mindfulness walks or simply spending time outdoors in my garden have not been possible due to extremely hot weather. For me, movement is essential for both physical and mental well-being. I feel overwhelmed with the number of projects on my 'to do' list, but even when I do go through the motions of 'productivity' – it seems to lack the spark 'joy' I usually feel. The exceptions are when I have the opportunity to connect with 'my tribe' using virtual forms of communication, and when I keep up my 'joy mandala' practice. I find shifting my top-of-the-mind awareness to joy is more important than ever. To create a joy mandala, I simply draw a circle or heart in the middle of a blank page. Next, I add lines coming out from the outer edge of the circle so it looks like a child's drawing of a sun. On each line, I add words relating to things that bring me joy. Every morning, the first thing I do is look at my mandala (or create a new one) and decide what 'joy action' I will take to start my day. For many, the day starts with worry about problems, 'to do' lists, or other concerns. Shifting attention to small joy actions we can take, begins each day in a positive affirming way.

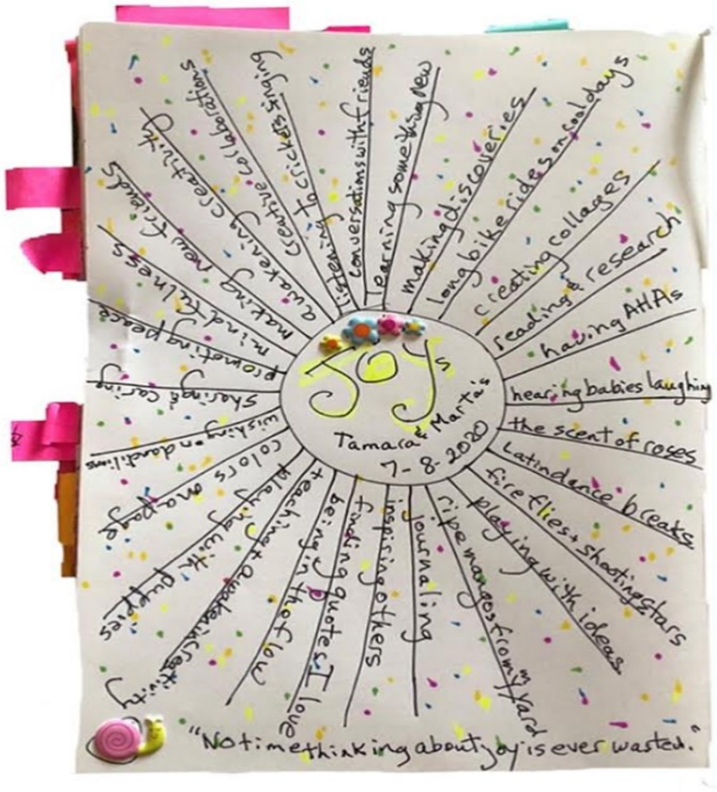


Figure 1 'Joy mandala' created by Marta

Tamara

I loved how Marta differentiated imagination between negative and positive imaginings. During COVID time, it is easy for us all to fall into negative imagining. When we feel threatened or scared it is natural to want to try to protect ourselves by imagining all the things that might go wrong or cause us discomfort and pain, before imagining proactive possibilities. We think this negative imagining prepares us for the impending future, but what it really does is ramp up our anxiety and fear and leaves us somewhat debilitated to think up other options for ourselves.

I have experienced this with regard to my position as an art teacher. Overnight conditions for my work changed. Suddenly, I needed to develop new skills and strategies to help my students complete their school year. I fell into the trap of starting to feel upset and angry about what was happening. Looking ahead, with just 7 years left to retirement, I imagined all my future plans threatened and disrupted. It took me weeks to even start to be able to think and imagine positively about the situation. It took concerted effort to bring a positive mindset to the challenge this new teaching environment could provide.

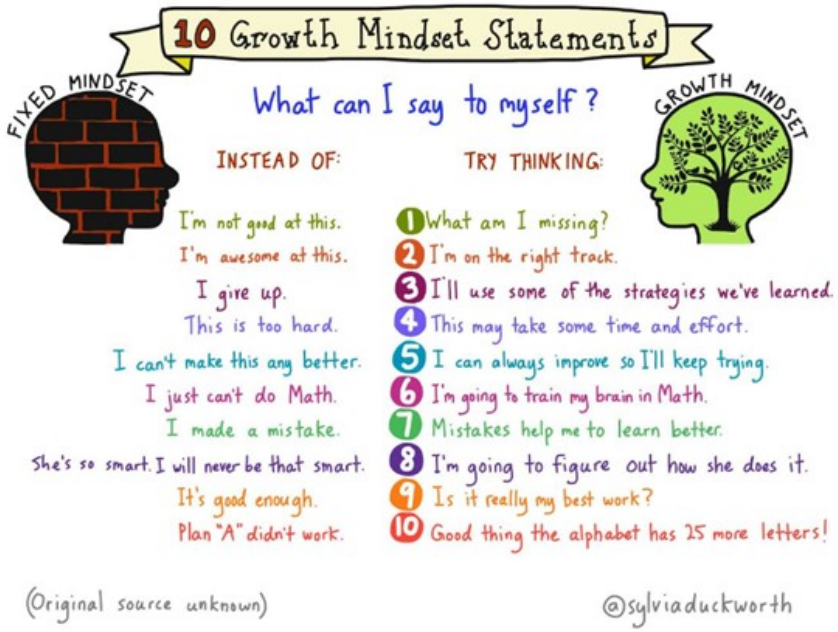
Looking to next year I have developed a strategy for how to tackle the ambiguity of the school year. I feel ready to imagine – no 'pretend' - I am a brand-new teacher who has just been hired to teach. My 'new teacher mindset' will allow me to shed all pre-conceived notions of teaching and lessons from the past and focus on the road ahead. I am excited and energized thinking of all the ways I can expand and grow my teaching philosophy in ways that help students to discover, nurture and develop their unique interests and talents so they can bring their strengths to the challenge of purposefully building a world that is better than they found it. I am imagining a curriculum with more emphasis placed on students partaking in self-directed experiential learning opportunities that foster their curiosity and interests through mentorship programs. These programs will emphasize health and wellness through practice and development of meaningful self-care practices that feed physical, emotional, and mental health needs.

This possibility thinking comes at the perfect time as I believe the current education system is not preparing our children for a future full of change and ambiguity. High levels of creativity (and imagination) will be needed to inform the jobs of the future as well as health, wealth and well-being. I have the awareness now that I have been practicing the wrong kind of imagining – the kind focused on what is wrong, rather than what is possible. This new teaching situation provides us with an opportunity to try out some new things and think up new ways.

Figure 2 Tamara's original art "Each Day I Grow My Imagination" (mixed media on canvas)

Marta's practice of generating 5 positive imaginings for every negative imagining we notice is a practice to help us to generate a "growth" mindset[1] rather than falling back on old patterns of doing. As these systems begin to show cracks and even to collapse around us, as we start to see that there is room to imagine living differently. What would it be like to imagine positive change and finding ways to continue education in community and other environments without jumping into judgement?

This question leads me to imagine families growing their own food again. I see front lawns planted with all kinds of wonderful edible plants. Families working together, interacting with neighbors, and sharing their harvests with people in need throughout the community. What if education was not something limited to the indoors? There are many lessons to learn from nature and protecting pollinators and wildlife. I feel myself taking in this vision, from a new, playful possibility space, completely free of the usual 'inner commentary' of "is this really possible" or "what are all the things that could go wrong."



Now I am imagining schools differently. I see students coming into groups based on their interests and curiosities working alongside teachers and community members. Teachers are more like coaches, mentors, and facilitators helping learners develop their learning and discovery goals, and then supporting them in reflecting on and imagining their individual objectives. The environment is free of competition or 'comparing.' Every student is encouraged to learn what they are interested in studying or investigating. Support groups are formed to help each individual grow and develop their ideas, skills, personal goals, and special interests.

I leave this imagining as it is…without judgment or analysis…to allow possibilities to grow.

Our invitation to imagine: Who has ideas for designing a 'dream' space for cultivating creativity, self-expression and imagination in community across the lifespan? What if we all imagine a center that is inclusive, multi-generational, nurturing, encouraging, and an accessible 'safe space' for all who come in peace to make art and foster healing (emotional and physical), joy, and learning. The ultimate goal is to increase human creativity, connections and hope in a world in transformation.

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How both positive and negative imagination impact on our vision, motivation and action

Chris Jones

Chris is Employability Manager in the School of Architecture, Design and the Built Environment at Nottingham Trent University. He has previously worked as a Careers Adviser in Higher Education and as a Personal Adviser, Team Leader and Project Manager for Derbyshire Connexions Service and Local Authority. He is interested in employability as a route to personal development and social mobility.

Finding the impulse

When I first saw the call to action for this issue on imagination, my first thought was, "sounds interesting, but I'm feeling really unimaginative. I can't even think of times when I have used my imagination recently, let alone how I would write about this. And anyway I don't have the time or headspace for this at the moment." A couple of weeks later, when I had a bit more time and was in a more relaxed mood, I dusted off the email and started to have a think about some aspects of imagination that I would be interested in reflecting on. This unleashed some further thoughts and soon I was feeling quite excited and motivated about writing something. And this captures the thrust of my reflections: the impact that imagination - both positive and negative - can have on our motivation, and how we can find the space to use our imagination in a positive way to help shape our futures.

Imagination underpins empathy, visualisation and motivation

As a careers adviser, imagination played an important role in helping me understand my clients as well as helping them understand themselves. The process of guidance is about empowering clients to shape their own future. This requires various skills on the part of the adviser, but the ability to empathise with the client is an essential one of these. I need to understand the client's situation from their perspective rather than overlaying my personal values or interpretation onto it. This in turn requires not only the ability to question and listen, but also to imagine what things look like from where they are sitting. It's all too easy to suggest a course of action which would seem perfectly reasonable to me (Make some contacts on Linkedin! Ask people for work experience! Sign up for a qualification! Do some volunteering!) but might seem unthinkable or impossible to someone else due to their circumstances and/or state of mind.

And this is where another aspect of imagination comes into play within guidance. For something to be achievable, it has to be thinkable, to be able to be imagined. In the words of Emily Dickenson *"the possible's slow fuse is lit by imagination"*. So I not only need to use my imagination to empathise with the client, I also need to help them to use their imagination to envisage possible futures and explore the possible routes to these futures. The use of visualisation exercises, for example, help clients to imagine a possible future state - what it might look like, and how it might feel - can create an emotional link to that future which may in turn provide the motivation required to take the steps necessary to work towards its achievement. In other words, out of an imagined possible future can grow the beliefs that "this is a future worth having" and "I can achieve that future".

Last year I moved house with my family. As anyone who has bought a house will probably appreciate, the process was costly, time consuming and at times frustrating and stressful. We paid far more than we had budgeted for and have landed ourselves with a shiny new 25 year debt. It was also one of the best decisions we made and I have been grateful on a daily basis since the start of lockdown for the extra space we have and particularly the garden and its associated wildlife that we have been so lucky to enjoy. I certainly didn't imagine this time last year being stuck in the house with my family for months on end, however I did imagine - from the first time I saw the house - what it might be like for us to live there. This will also be a familiar feeling to many people; the idea of 'falling in love' with a new property on first viewing. Immediately you're thinking about where your furniture could go, who will have which room, how the rhythms of your life will fit into the space and so on. It is that imagination of a - probably idealised - vision of the future which provides the emotional connection and motivation to go through the huge amount of expense, stress and hassle to make it happen. It's also the motivation that sustains us when we suffer the inevitable setbacks along the way.

This idea of imagination or positive visualisation being a key driver of motivation and therefore action is evident across many areas of our lives, from career progression to starting a family to more mundane activities (imagine how good you'll feel when you've done the washing up / been to the gym / finished that boring report etc.!) But it's not always 'positive' imagination that can be a spur to action and change.

Negative imagination and motivation

I recently completed an online carbon awareness training course. One of the activities involved comparing two visions of our climate future; a positive one where action is taken and the impact of climate change is mitigated, and a negative one where warnings are ignored and action is not taken leading to spiralling catastrophic impacts for the planet and society. It was an interesting exercise and made me reflect that it was imagining the potential negative consequences of inaction that is more likely to make me take action in this case rather than the positive vision of how things could be. And, going back to the point about empathy above, I found in this instance that I was more motivated to act by Imagining the potential impact on others (in locations and generations more likely to suffer the dramatic impacts of climate change) rather than myself. Perhaps the same could be said for the current widespread support from all communities for the Black Lives Matter movement for example, or indeed even the adherence to Covid-19 lockdown measures even among those far less vulnerable to any risk. It can often require the imagination to be able to empathise with the actual or potential suffering or harm to others to provide the motivation to take action.

Negative imagination as a barrier to motivation and action

However, while 'negative imagination' can be a spur to action, it can also be a barrier. In my life and work, I tend to be very much a 'big picture' person. I like and am motivated by ideas, concepts, seeing potential connections between things and how these could be pulled together. This engages my imagination positively and helps create goals which I can feel motivated towards achieving even through the trudge of details and practicalities. However, one of the things that can stop me achieving these goals is fear - fear of getting things wrong, of making mistakes, fear of what other people will think and how they will react. And it is my 'negative imagination' that can generate this fear - imagining worst case scenarios, difficult situations or conversations. Everyone has had the experience of laying awake at night worrying, but what is worry but imagining the bad things that could happen? So this negative imagining can lead to concern, fear or anxiety which can in turn result in inaction or avoidance, and failing to take risks in making difficult decisions to avoid the potential negative outcomes imagined.

And not only can the fear generated by negative imagination counter or outweigh the motivation of positive imagination, it can also be a barrier to our ability to access our positive imagination in the first place. It is a well-established phenomenon that we are biologically attuned to focus more on negatives (or threats) than positives (or opportunities) for evolutionary reasons, and the neuropsychological workings behind the 'fight or flight' mechanisms, the role of different parts of the brain such as the amygdala and the hippocampus, and how 'danger' can close down the 'higher' workings of our brain are widely written about and discussed. Put simply, it is more difficult to be positively imaginative and creative in stressful or negative circumstances.

And this creates a dilemma for individuals, organisations and society as we try to imagine our way out of the current circumstances to create a positive future, or the 'new normal' as it is now commonly referred to. To move forward and adapt ways of working and learning across all sections of society and the economy will require creativity and imagination. However, in our uncertain and unsettling times with many people facing personal and professional pressures and having to work in isolation, there is a danger that our capacity for this kind of open, creative, positive imagination will be inhibited and opportunities to 'build back better' by coming up with novel solutions and doing things in different ways, may be lost.

Positive imagination needs space and time to flourish

So what is the antidote to negative imagination? In my own experience, it is often time that helps put negative imagination and thoughts into perspective, and also time that is required to be carved out in order to enable me to use my imagination in a positive way to think about ideas and solutions. Discussing ideas with other people, especially if they are empathetic, can also be a great way to spark ideas off other's imaginations. Once I have an exciting or interesting idea in my head, then the motivation to pursue it kicks in and as the idea solidifies in my mind, my attention is drawn towards it and ways of making it happen. This in turn may well spark my creativity which also makes me feel positive.

The trick is to create the environment for that initial spark of inspiration and imagination. It is important and therefore beneficial for individuals and organisations to consider how they can carve that thinking time out for themselves individually and collectively and let imagination run free, protected even for a short period of time from the everyday pressures of targets, delivery and expectations. Of course, this only generates the seed, and a seed is useless without the soil, water and sun that is provided by planning and concrete action, and even then not all of the seeds will grow. But without the seeds, nothing will grow, or we will continue to use the old seeds and harvest the same crop we always have.

How might this be achieved within the context of lifewide learning? One approach could be to adopt a principle of *'imagine first'* before undertaking any task, activity or piece of learning. We could either give ourselves, or as educators and managers give others, the time and permission before commencing a task, to spend some time in the realms of imagination. This could encompass creative thinking ("What could the outcome of this activity look like if there were no constraints of time, resources, ability etc.?"), positive visualisation ("Place yourself in a positive future where this activity has gone well. What does it look like? How do you feel? What steps have you taken to achieve this?" etc.) or allowing ourselves to acknowledge and examine our negative imaginings ("What could go wrong with this? Why might it go wrong? How might that make you feel? How could that be avoided?" etc.). This could be done as a self-directed activity but it may also help for learners or employees to have a forum to share and discuss the outcome of such exercises, in one to one conversations for example, or by sharing, perhaps anonymously, with others in an online forum. Such an approach could help to spark off imaginative approaches by sharing creative ideas, help fix future positive visualisations in reality, and it could also help to see that some of your fears are probably shared by others within your peer group – who you probably assumed were all highly able and confident! This in turn can create a sense of empathy and community and an environment in which people are more open to sharing their ideas, hopes and fears in a way that will be of benefit to all.

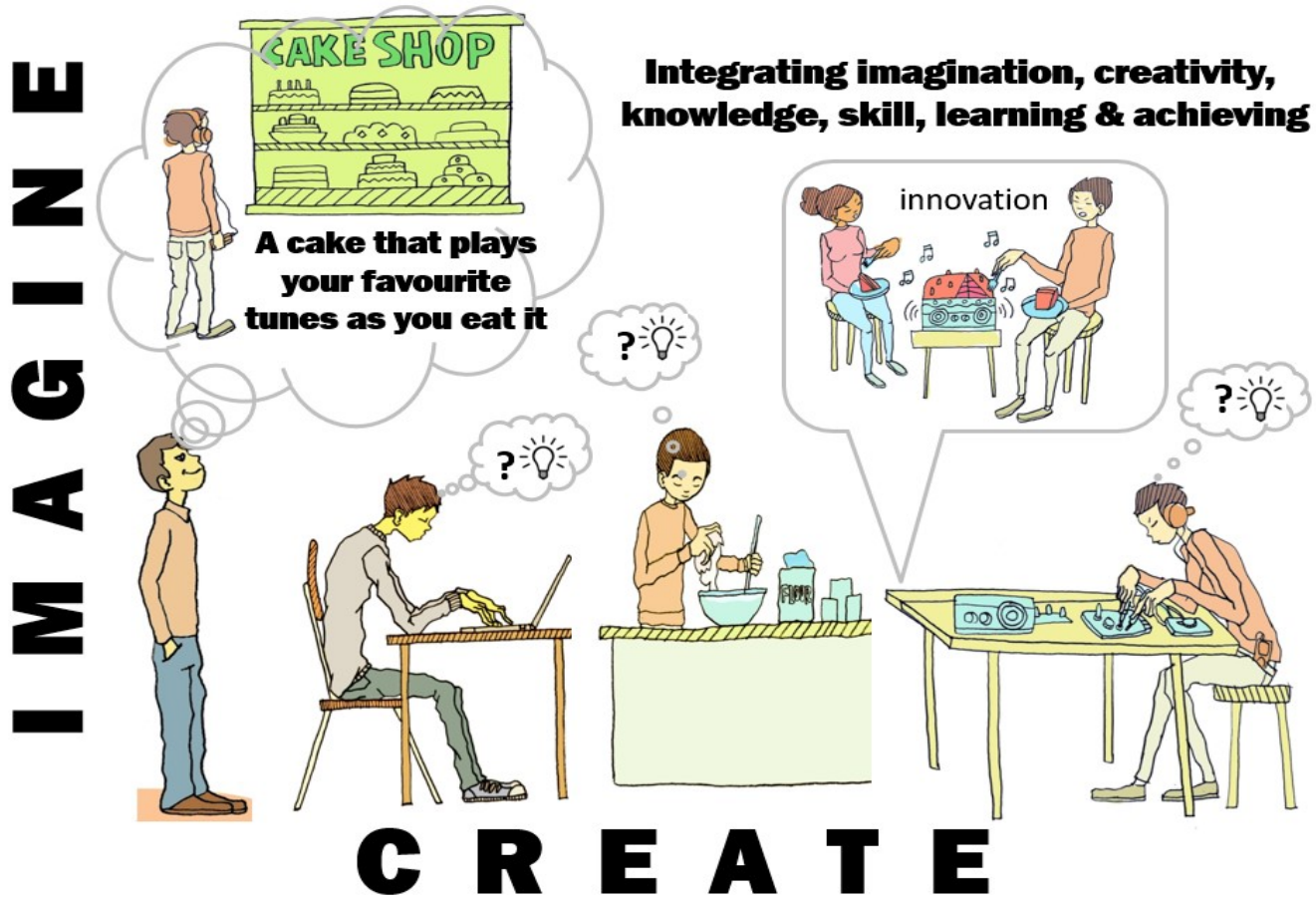
So what?

Of course, much of what I have said above is the kind of territory already well covered by various disciplines and approaches, including solution focused therapy, positive psychology, mindfulness and a myriad of other 'pop-psychology' motivational techniques. But the point from my perspective is seeing imagination as the essential fuel that can help generate empathy, create solutions and powerful motivations, whilst at the same time recognising that our imaginations also have the potential to create negative thoughts and fears and inhibit action, productivity and creativity. We have to respect - and teach - the power of imagination and its importance to how our lives and futures can be shaped, and think about how we can get into the right space in order to be able to take advantage of the positive outcomes of our imagination whilst limiting the negative.

The distinction between creativity and imagination.

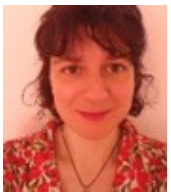
Heather Chaplin in conversation with John Seely Brown

"I think we're way too focused on creativity. It's misguided. We should be focused on imagination. The real key is being able to imagine a new world. Once I imagine something new, then answering how to get from here to there involves steps of creativity. So I can be creative in solving today's problems, but if I can't imagine something new, then I'm stuck in the current situation."



Resilience, Imagination and Creativity; an eclectic mix of music and thoughts during the May lockdown

Aspasia Eleni Paltoglou



Aspasia is a Lecturer in Psychology at Manchester Metropolitan University, UK. She is interested in what makes us creative.

'Ode to Joy'

One April morning during the COVID-19 lockdown, I heard on BBC radio 4 that the National Youth Orchestra of Great Britain was encouraging people to dust off their old musical instruments and play Ludwig van Beethoven's 'Ode to Joy' from Symphony No 9. This was a lovely way to celebrate both 250 years since the birth of Ludwig van Beethoven and express ourselves musically during the lockdown. Despite having been told by a friend that I sound like a dying walrus, I took on the challenge and played the piece on my clarinet. I thought I sounded pretty good, considering I hadn't played for almost 20 years. When I stopped huffing and puffing and feeling faint (I never got the hang of diaphragmatic breathing) I remembered the last concert I went to before life came to a halt. It was only a few months ago, one of those perfect days when we could approach other human beings less than 2 metres without infecting each other to death.

More specifically, it was 15 February 2020, at the Bridgewater Hall in Manchester. BBC Philharmonic Orchestra played Beethoven, to celebrate his 250 birthday, including the Symphony No 7. It was a lovely concert, in a wonderful venue. The common theme behind the pieces was the resilience Ludwig showed in the face of adversity. As the BBC program 'Being Beethoven'[1] illustrates, Ludwig went through a traumatic childhood. His father was an alcoholic and put immense pressure on Ludwig to become a musician. Ludwig's mother died when he was 16. He was also hard of hearing and eventually went deaf, which is not helpful when you are a musician. Despite his deafness, he carried on and created musical masterpieces such as the Symphony No 7.

Due to his social isolation that resulted mainly by his deafness, Ludwig was able to (and in some ways, had to) dig deep, expand his imagination, find his own creative voice and write innovative music that nobody had heard before. Listening to the experts in 'Being Beethoven' left me with the impression that composing gave him strength and a sense of purpose and encouraged him not to give up, despite all his health and emotional problems. He also used music to express not just his inner emotions, but also emotions triggered by events of the time. While Vienna was being bombed by French troupes, Ludwig created some very uplifting and energetic pieces, such as Piano Concerto No 5. Through his music, he was able to transcend himself, and embrace the world. He could be a very difficult person in his personal life, but as a composer, he was able to unify and heal other individuals.

That this is a topic worthy of examination is indicated by the limited research on the relationship between resilience and creativity. Resilience can be defined as the process of recovering from a negative event[2], while creativity can be defined as making something novel and relevant[3]. Meltz and Morrell [2 p 313] note, 'if one accepts creativity as a trait linked to divergent thinking (novel, appropriate solutions) and uses Csikszentmihalyi's criterion[4] of considerable change in a domain, resiliency can be viewed as creativity manifested in one's personal domain.' In other words, having the flexibility to invent and employ a variety of solutions to overcome adversity is inherently imaginative and creative.

The concept of 'flow' is also relevant here, as it is an experience of being immersed in a very enjoyable and productive activity, which has been shown to promote wellbeing[4] and creativity has been shown to be highly interlinked with flow. Perhaps the positive effects of flow on wellbeing that are usually experienced when involved in a creative task, could encourage the development of resilience.

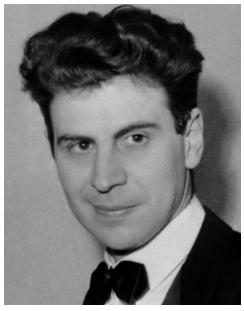
Furthermore, imagination is an important aspect of creativity. More specifically, according to Jung et al[5] imagination can be seen as an important link between knowledge and creative insight. They define imagination as 'drawing upon previous experiences to engage in mental stimulation, in order to achieve future goals' [5 p.2]. Imagination involves several cognitive functions, such as episodic memory retrieval (thinking of ideas relevant to one-self or work), future thinking (thinking about oneself in the future), and visualisation.

'A sociological imagination challenges us to shift our gaze from designing interventions that modify the anti-social behaviour of youth or that encourage individual pathways to resilience to developing strategies for working with youth that recognize and address the social conditions (e.g. social inequality and discrimination) that produce adversity and exclusion in the first place. As such, the focus is on the collective and the systemic. A social-ecologies perspective challenges us to encourage and promote individual well-being by increasing the capacity of the individual's surrounding social ecologies to provide access to resilience-supporting resources. As such the focus is on the personal and the contextual. Engagement with a sociological imagination draws into sharp relief social ecologies' embeddedness in systemic institutional structures and discourses.'[6]

Resilience and imagination are relevant not just at the level of the individual, but also at the societal level. Of relevance here is the concept of 'sociological imagination', a concept in relation to the attempt to understand the link between the individuals and society[6]. Vanterplaat[7] points out that social imagination can help us focus on improving the social environment that might have contributed in making the individual vulnerable and less resilient in the first place (such as social discrimination), instead of just focusing on interventions that increase the resilience of the individual and ignore the adverse social conditions.

Next, I will reflect on an artist and activist that fought to change social environment and improve social conditions for his fellow citizens. Although having to deal with war and social divisions, he was driven by a vision of a better world, and created music that helped both build not just his own individual resilience, but the resilience and sense of belonging of his fellow citizens.

Mikis Theodorakis - Another story of resilience and creativity



Listening to the music and reading the concert program referring to Ludwig and resilience reminded me another story of musical resilience, that of Mikis Theodorakis. As he himself said in a TV documentary[8], "when I was young, I came across Ludwig's music, and it made a huge impression on me". As years passed, he wrote classical music as well as popular songs. Politics (to the left) and helping Greece find its way was another of his passions too. After a bloody German occupation and a bloody civil war, there was effectively a cold war that lasted for years in Greece, before a full-blown dictatorship took over from 1967 until 1974. People with left-wing political convictions – many of whom had helped fight during the German occupation, as part of the Greek communist party that organized the resistance – were persecuted.

After the second world war, Mikis found himself in a camp for political prisoners. He had got hold of some blank music paper and copied Ludwig's symphonic music in order to comprehend it better, as well as writing his own music. When he was a political prisoner in Macronisos, he had focused on writing his own music, his first Symphony, and he kept these precious papers in a wooden box. That was around 1946, after the Second World War, during which Mikis had fought against the occupation.

Once he and other prisoners were told to go out and walk. As they were walking, the guards started hitting the prisoners. Mikis put the wooden box that contained his Symphony above his head to protect himself from the blows. The wooden box broke and the papers with his composition started flying around like birds, until there was none left, and the box was completely broken. This was not the only or the last time Mikis was tortured. One of the tortures he suffered was being buried alive for 48 hours up to his neck, and having to fend himself from rats with his mouth. Yet he has lived on in his 90s, and created countless pieces of music. I wonder how he is coping with the pandemic.

What was he thinking about during his confinement when deprived of his basic rights and freedoms and subject to torture? What kept him going so that eventually he make the contributions he has made to the world? Listening to his interview[8] I was left with the impression that his imagination of a fairer world and his musical creativity were what kept him going and key to his survival.

After these experiences, Mikis found himself in Paris, in the 1950s. As he mentions himself in the interview, it was the first time that he did not feel as a second-class citizen. He could continue working on his Symphonies without the fear of being tortured and his music being destroyed. Nevertheless, he felt nostalgic for his country. He also started to realize how badly damaged he was. He just spent his time in his room, 'licking his wounds', and writing music. He continued working on his Symphonies, which were very dark, mirroring his internal tortured psyche. Listening to his interview, I was left under the impression that this seemed to perpetuate his low psychological state due to the tortures. Symphonies were intellectually difficult to write, and the symphonies he wrote were depressing in nature.

Then, he was sent a book of poems called 'Epitafios' ('lamentations'), by Giannis Ritsos. Ritsos wrote these because he was very touched by the death of a 25-year-old worker that was in a demonstration/ protest during a strike, killed by a policeman in 1936. The poems are from the point of view of a mother mourning her dead child. Presumably these poems caught his imagination, triggered emotional reactions and memories that enabled him to empathise in a profound way, which could have helped his musical ideas to flow. Mikis used these poems to create very popular songs, to have a breather from the depressing heavy, symphonies he was creating. Obviously the songs were not merry, they were mourning songs. But somehow, by creating these songs, to express loss in relation to the dire situation in Greece, helped him find catharsis and hear to an extent.

What was the mechanism through which Miki's trauma was (to an extent) resolved by creating music? Hearing Mikis talking about these two types of music he created and his emotional reactions at the interview, brought to mind the psycho-analytic approach as summarized by Alayarian[9]. The patient is first encouraged to process and reflect on the trauma, and they are then encouraged to mourn. Looking at Mikis' case, by writing the symphonies, perhaps he was able to process the trauma and associated emotions through writing the symphonic music. By writing the music lamentation songs, perhaps he went through the process of mourning, for himself, for the comrades he lost (some of them died or were harshly beaten before his eyes) and for the demise of his country. I am probably over-stretching the parallels here, but in any case, by Miki's own admission after writing *Epitafios*, he experienced some catharsis and felt significantly better.

Context is also important when trying to overcome a traumatic situation and build resilience. Alayarian[9] reviewed different therapeutic approaches in relation to refugees to the UK that had experienced trauma in their home countries, and discusses the importance of context in relation to trauma and therapy. Refuges tend to feel nostalgia for their country, but that possibly triggers trauma memories and negative psychological effects due to the trauma they experienced there. Some therapies, such as Cognitive Behavioural Therapy do not take into account and discuss the context in which the trauma has taken place, while the psychodynamic approach does take it into account. Isolating the trauma from the context in which the trauma occurred, could potentially prevent the therapist from fully understanding the patient's condition. Ritsos' poems reflected the context of the trauma, i.e. death and conflict in Greece, which might be why they were healing for the composer.

My imagination in lockdown

Perhaps my experience of being locked down and deprived of the freedoms I normally have, encouraged my imagination to make these connections and explore their meanings.

For me, Ludwig's 2nd Movement of Symphony No 7 for me encapsulates the conviction to hold on when things are unbearable, finding the strength and resilience to keep going, more so than Ode to Joy from the 9th Symphony. For its sadness, quiet resolve, carrying on at the face of adversity.

Come to think of it, the song ''Tis One Swallow' by Mikis is also very apt here. The words are super depressing; it describes ('the body of') May being abducted and being buried in a tomb in the sea, sealed in a deep well, which poetically reflects some of the terrible things that went on in Greece. The words were part of a long poem called 'Axion Esti' ('Worthy It Is') by Odysseus Elytis, which was inspired by the Second World War, during which Mikis' traumatic experiences occurred. After pondering on these, May lockdown does not seem too bad.

Mikis played his songs around the world, drumming support for Greece. After democracy was re-instated in Greece, he started doing concerts there too. He imagines himself as a priest of democracy, trying to unify a divided and damaged nation. This brings to mind the way Ludwig managed to transcend himself and create music in which he expresses love for humanity and certainty. for a better future.

Mikis sung his heart out with his damaged lungs, along with thousands of Greeks that attended his concerts. His strong convictions and sense of purpose and a sense of belonging[9], coupled with the marriage of his political convictions and musical creativity in his songs, must have further helped him recover from his wounds and build resilience.

For many Greek people, including my parents, listening to Mikis' uplifting songs with words from amazing poets helped them take courage and build their own resilience, help them imagine a better society that does not undermine them. Ironically, I once nearly broke my parents by making them listen to 'tis one swallow' 25 times in a row when I was four. Remarkably, they survived, they still love Miki's music and listen to it frequently. What a remarkably resilient pair of humans.

As I walk around the neighbourhood in the evenings, as part of the 1-hour exercise, I think of Miki's song 'Dromoi palioi' (old streets) with the words of the poet Manolis Anagnostakis.

Dromoi palioi (old streets)

'Walking the streets of old that I used to love and hate immensely
walking in the shadows of the homes the nights of the inevitable homecomings
And the city is dead
I find my insignificant presence at each corner
I hope I will meet you some time, lost ghost of my passion
Forgotten and untamed I keep walking
still holding a trembling spark in my wet hands
And I kept walking through the night, a stranger among strangers'

The song creates a sense of imaginary community between myself, the creators (song writer and poet), and all those walking aimlessly in empty streets, and that makes the world seem less deserted and alien. It gave me courage, and me and helped to continue walking and stay positive despite all the restrictions. And of course I have taken the habit of singing the song with my guitar to my family in Greece over the phone, although not 25 times in a row, to their immense relief.

Perhaps a music mixer could mix the music of Ludwig and Mikis; musical resilience squared. It would certainly be a powerful mix, a medicine of sorts, which could help make individuals and societies more resilient, and help us imagine and build a better post-Covid-19 world. I am not sure what the result will be musically, especially if it is played by clarinettists of my calibre. Probably like an amateur orchestra of grumpy walruses trying to tune.

Resilience, imagination and creativity in my very-own pre-Covid-19 lockdown

This discussion of imagination, creativity and resilience in isolation, brought to my mind another lockdown. Around a year ago, I was about to be away from work for a major operation, which would involve my very own personal lockdown for around 3 months. Just before that, a colleague asked me if I would like to be part of a supervisory team for a new PhD student. I noted that I did not know when I would be back, so perhaps he should be approaching a different colleague. The truth is that I could not imagine myself in the future. To my surprise, my colleague suggested that I could join them when I was back at work.

I think that the fact that another person demonstrated that they could think of me as an academic in the future resulted in a number of things. It reinforced my identity as a researcher, educator, and creative thinker that has a lot to offer, it helped me imagine again myself in the future, it reminded me that I am many more things than a sick person, and it gave me something to look forward to. I feel that all of these factors enhanced my resilience. Not only did I come back, but that particular lockdown helped me slow down, focused my thoughts, helped me see things with fresh eyes and appreciate things I didn't pay attention to before, and helped me find what I was interested in in terms of research and writing and be more creative.

As a closing remark, these are just some reflections and initial thoughts on the relationship between imagination, creativity and resilience, which was triggered by the recent lockdown. My hope is that these rough sketches will inform my future studies on this topic and my attitudes as I meet obstacles and setbacks in life.

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Inspired by Place: A Weekend of Imagining On the Isle of Skye

Nathalie Sheridan

Nathalie has undergraduate and postgraduate degrees in education and since her PhD focuses on translating creative pedagogies into higher education. She is running two postgraduate courses on the MEd in Academic Practice: Creative Pedagogies for Active Learning and Designing Educational Inquiries. Focus here is authentic assessment, in which the learners draw from their lived experience, and own practice. Encouraging them to realise the importance of life experience in their academic practice.

As soon as lockdown began to ease, my partner and I decided to go into the remote wilderness on the Isle of Skye. It's a beautiful and inspiring place where the history of human habitation and landscape are tangible and exposed. In my teaching I often use storytelling and digital storytelling so the idea of stories was in my mind a lot during the weekend. I was inspired to imagine all sorts of things and was moved to capture something of my experience in the stories the landscape and human artefacts while there in a poem and photographs.

Much to my surprise, while engaging in these creations my partner took a pen and for the first time in over ten years made a drawing.

We had spent a full day on the Isle of Skye and were reflecting on how many varied experiences we were able to immerse ourselves in, trying to find words for the inspiration this place had triggered. I am writing poetry regularly, quite often to find a way to express things I have no words for—which sounds counter-intuitive. However, when I look at an empty page—or more often the empty digital space in my notetaking app on my phone—I start with one word and from there let inspiration and imagination lead me.

This poem originally was supposed to simply reflect our day on Skye, as John had posed a challenge, to write a poem that incorporates all we encountered, from dinosaurs, dolphins, to fairies. However, once I began writing, I realised that weaving this story of our impressions, the awe we felt, the speechlessness when trying to imagine 166 million years, the poem became not only a story of our day but the story of the place itself—as experienced by us.

The power of natural forces is exposed clearly on the Isle of Skye and challenged our imagination to grasp just how much movement the land had undergone. Though, for me the most powerful shift was that my partner after ten years, finally took a pen again and drew. Going back to skills he had developed decades ago. Somehow, being able to embrace the experience, exploring the place, being exposed to the elements on our hikes, watching the swell of the ocean, and listening closely to the ebb and flow around us, has thrown us back onto our selves. This reconnecting and creating space away from the day to day humdrum of our life let imagination emerge and inspiration. This deep connection with a place and its history is not a story the tourist guides are able to capture. Hopefully at least to some degree the poem does. One quote from earlier in the magazine struck me, it was about being able to see the world as any object saw or experienced it. Unknowingly, this is what I tried to achieve with the poem. Interrogating the landscape, the objects, and artefacts within it, to imagine a richer world and tell a story, that makes sense of it all.

Inspired by Skye
Nathalie Sheridan

Lashes and lashes of rain
Are pelting the windscreen
Windshield wipers trying their best to catch up
We are on a mission
Dinosaurs were here
On Skye 166 million years ago
Seen
Not by humans

But their footprints
Rediscovered
20 years ago
By two humans and their dog
Some sort of mutated hairy dinosaur descendant

We stand there
On slippery ground
Soggy feet
Soggy hats
The waterproofed rest withstands the elements
So we stand
Whilst water gently drips off us
Into the 166 million year old footprints
And our minds cannot fathom
That chunk of time
That time-line
We can see this point in history right in front of us
Feel the imprint of the toes underneath our fingers
What we cannot see
Is the distance between here and then

We continue on a cliff-walk
An overly excited father
Beak full of worms
Tries to distract us from a nest
On the ground
Another dinosaur descendant
A tiny could-be-dragon
Without fire but feathery wings
Is this where dragon stories come from?
Our–non dinosaur–ancestors finding bones
And skulls with prehistoric sharp-edged teeth
Or is it because the hills look like sleeping dragons
Mist gently rising from overgrown nostrils

We walk along the cliff-edge
Basalt columns grumble underneath
They remember the dinosaurs
They have seen it all
Violent heat, emerging, cooling, changing, eroding
They watched
Watched on
And still remember a time when the animals
Whose fins we see emerging from our viewpoint
Looked quite differently indeed
Somehow the dolphins remind me of dinosaurs
Animals in-between
Sharp teeth, hunting, but for strange reasons
Like to play with humans
We watch them jump out of the waves
A waterfall is thundering next to us
Contributing to the decay of the basalt
With destructive powerful beauty

Somewhen in that chunk of time
Between here and then
Humans emerged

And as humans emerged other consciousness found an audience
Bound to place and nature
Essences of entities awakened changed from their slumber
Because humans live through stories
Humans want words that make-things-so
Words that pack meaning into tiny parcels
Which they string into necklaces of being
So the beings awakened into a consciousness
That limited them to the words and stories of humans
They knew they were more than that
The humans felt they were more than that
And so humans created rituals to grasp what their stories could not

And they left the places of these ancient beings marked
To remember that there are stories that cannot be told
But humans like the basalt have changed
Keen edges softened
Ancient stories retold shifted and morphed
Becoming echoes of their own memories
And with the stories the ancient beings too faded back into the landscape

However
Some rituals remained because they hold more than the stories could
So the fairy glen holds an infinity circle
A fairy hill has trees with colourful ribbons and gifts
Fires are lid on the longest night and the longest day
And when the sun dies and is reborn

The stories have changed
Yet
Yet
Yet our rituals hold fast
As we throw a coin in a well
And bind a bright ribbon on a tree
They know
And somewhere deep down we do, too
We hear the echo of stories never told

“Dare to Dream” : Let Imagination Turn Your Life into a Fantastic Adventure

Justin Miles

Justin is an author, writer, a professional adventurer, explorer, educator and speaker. In his own words “I don’t care what job title I have. I get to go to the most awesome places on Earth, do some really cool stuff when I get there and I meet the most amazing people along the way!” His adventures take place in polar, mountain, jungle and desert regions and are all used to support global education projects, to engage with schools around the world and to support charities and organisations working towards 'Sustainable Development Goal 4' which pertains to universal education provision . Justin has also shared his experiences and insights with Lifewide Education. You can find out more about Justin and the journey he’s been on, from being brain damaged in a car accident to tackling adventures and expeditions all over the world at http://www.justforthechallenge.com/

“Imagination has played a vital role in the shape of my life”

The ability to dream, to wonder and let my mind wander, to imagine and to visualise beneath, above and within a structured approach to objective and goal setting has enabled me to undertake a journey from being immobilised in a hospital bed to where I am now: an inspired adventurer tackling and having tackled adventures, challenges and expeditions in some of the world’s toughest environments.

At the age of twenty-six I was involved in a car accident. I’d never had a car accident before, not even a scratch, but this one was a doozy. The car rolled six times and came to rest on its side on the carriageway. Another car, travelling at roughly the 70mph speed limit, ploughed into the roof of my car and my car crumpled like a cheap tin can with me inside it. The result was a brain injury which left me unable to walk or talk. The disconnect between mind and physical being meant that I couldn’t control the movement of my body. I was a prisoner in my own skin.

During the initial stages of recovery I can’t remember having any conscious, purposeful thought - I simply existed - but as the weeks passed, my mind became active before it could control my body. My recovery started to gather momentum. I understood what was wrong with me and I understood that the key to recovery was repetition of movement to regain the lost motor-skills and proprioception, so I set to it.

Fatigue was a monumental barrier, but every minute that I was awake and able was invested in repetitious movements and exercises and over time my physical capabilities grew.

When I wasn't exercising in one way or another, when fatigue rendered me immobile, I would lay on a bed or sit in a chair in front of a television. The mind-numbing daytime television wasn't conducive to nurturing a 'positive mental attitude' towards my recovery, so instead I would revert into the recesses my own mind, reliving memories and playing out hopes and dreams. One day I recalled my childhood dream of becoming a real life adventurer and explorer, tackling adventures and expeditions all over the world - a 'real-life Indiana Jones' - a dream that had started edging towards reality at one point in my younger life when I hopped on my first long-distance flight.

My imagination ran rampant and I conjured up all manner of expeditions all around the globe, but the reality was that at that point in time I was barely able to speak let alone hold a conversation and I was still hardly able to walk.

The memory of those dreams gave me an anchor point and my imagination took over, weaving total make-believe stories with threads of real life until eventually, I decided that when I recovered - not 'if' - I would change my life.

I selected a few of the dreams, refined and defined them, gave them shape and form - a structure if you like - and began planning and plotting. The first obstacle was my physical state, so relevant goals were developed - by me without the restrictive advice of medical teams - and I started making it happen.

I ran a marathon. Then I ran a marathon or marathon distance run every week for a year. Then I headed back out to the jungles, then mountains, then a desert, then the Arctic and now, some twenty years on, I've tackled adventures, challenges and expeditions all around the world through jungle, mountain, polar, desert and oceanic environments and it all started by letting my imagination run wild. I dared to dream.

'Imagination' is the start point of most of my adventures: "Imagine if I…"

Despite what many people may think, daily expedition life isn't often a stimulating carousel of exciting experiences. The daily grind of an expedition is often a mind-numbing trudge - in what-ever form that 'trudge' takes - towards a defined objective. Step after step with an often slowly changing horizon. It's at these times that I allow my imagination to take over. My imagination liberates me from the work my body has to do in order to accomplish my goal.

I dream up everything and anything: new and exciting adventures; innovative alterations to equipment or new designs (most of which are unfortunately forgotten again by the time I get home!); ideas for books and feature writing; entire conference presentations; projects for home and even fiction stories.

In 2011 I had just returned from an Arctic expedition and called in to stay for a few days with friend and fellow paddleboarder Paul Hyman of London-based 'Active 360' (it was actually Paul who introduced me to paddleboarding whilst I was kayaking across England from the Bristol Channel to the English Channel).

We'd been for a late afternoon paddle on the River Thames and stopped in a beautiful little Italian restaurant on the way back. The conversation flowed, and as you can imagine having just returned from another Arctic trip, some of the conversation bent towards that experience. At some point during the evening these words slipped from my lips (and this really is a direct quote!) "Paul, imagine if we could pull off an Arctic paddleboarding expedition. Icebergs, polar bears, seals, Inuit villages - the lot…"

The conversation flowed and our imaginations rolled. People - experts - that we spoke with at the time said it couldn't be done, it shouldn't be done, it was too dangerous. Two years later a team of ten of us flew to Greenland and completed the most amazing expedition, negotiating the coast of Greenland

on paddleboards through waters rammed with icebergs of all sizes and not only was the expedition itself a success but so were the other and equal goals of engaging with schools around the world, having a positive impact on education in the Inuit communities (universal education provision, or 'education for all', is the key motivator for all of my work) and raising a shed load of money to boost the funds of a cancer charity.

Imagination, deeply and emotionally rooted in fantasy but anchored to reality through objectives and goals, is a powerful tool. I note that this concept is broadly in line with Ann Pendleton-Jullian's description of pragmatic imagination in the feature article.[1]

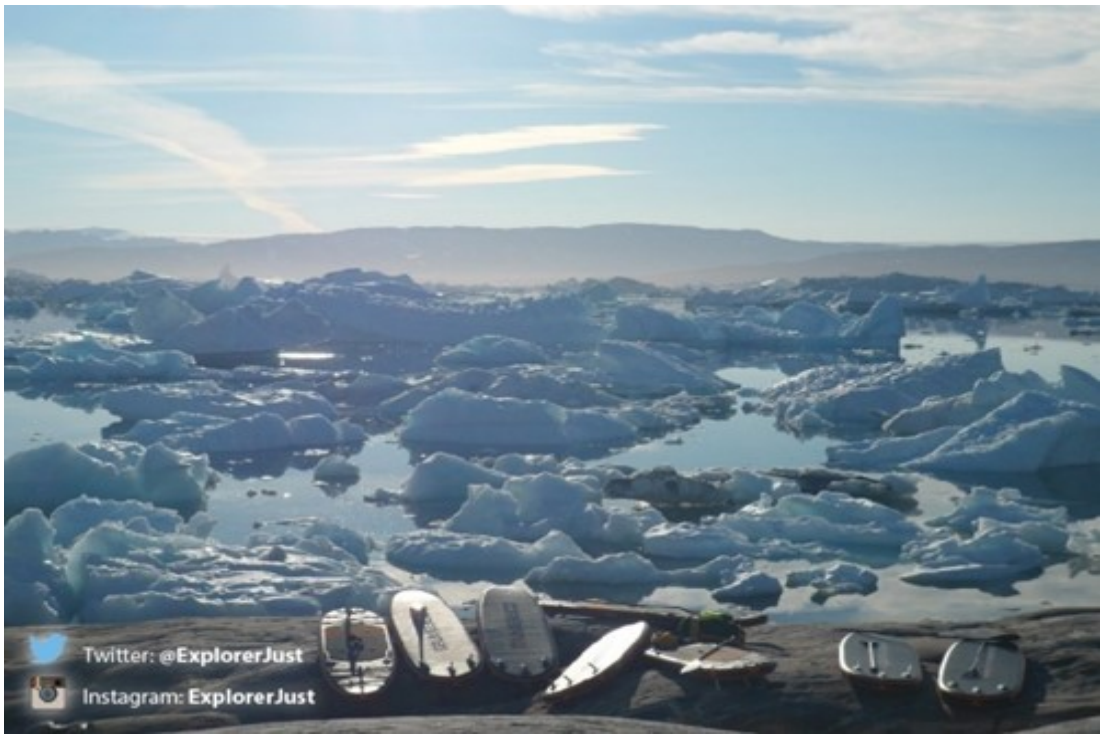
Imagination, combined with creativity and innovation is the key to success; the key to economic success, the key to how we, as a species, can live in harmony with each other and the key to how we, as a species, can live in harmony with the planet that we inhabit.

End Note

Justin's work expands far beyond adventures and expeditions: for more than twelve years he has contributed to the field of education globally and in particular universal education provision, or 'education for all' and as part of that process he has come to question the effectiveness of how education is currently delivered and measured the world. The foundation of Justin's beliefs lies heavily on creating the innovators of the future, and as part of that process, we need to encourage, nurture and empower young people to use their imagination.

Reference

1 Pendleton-Jullian, A. (2020) Pragmatic Imagination : A New Muscle for the White Water World Lifewide Magazine #23 available at https://www.lifewideeducation.uk/magazine.html



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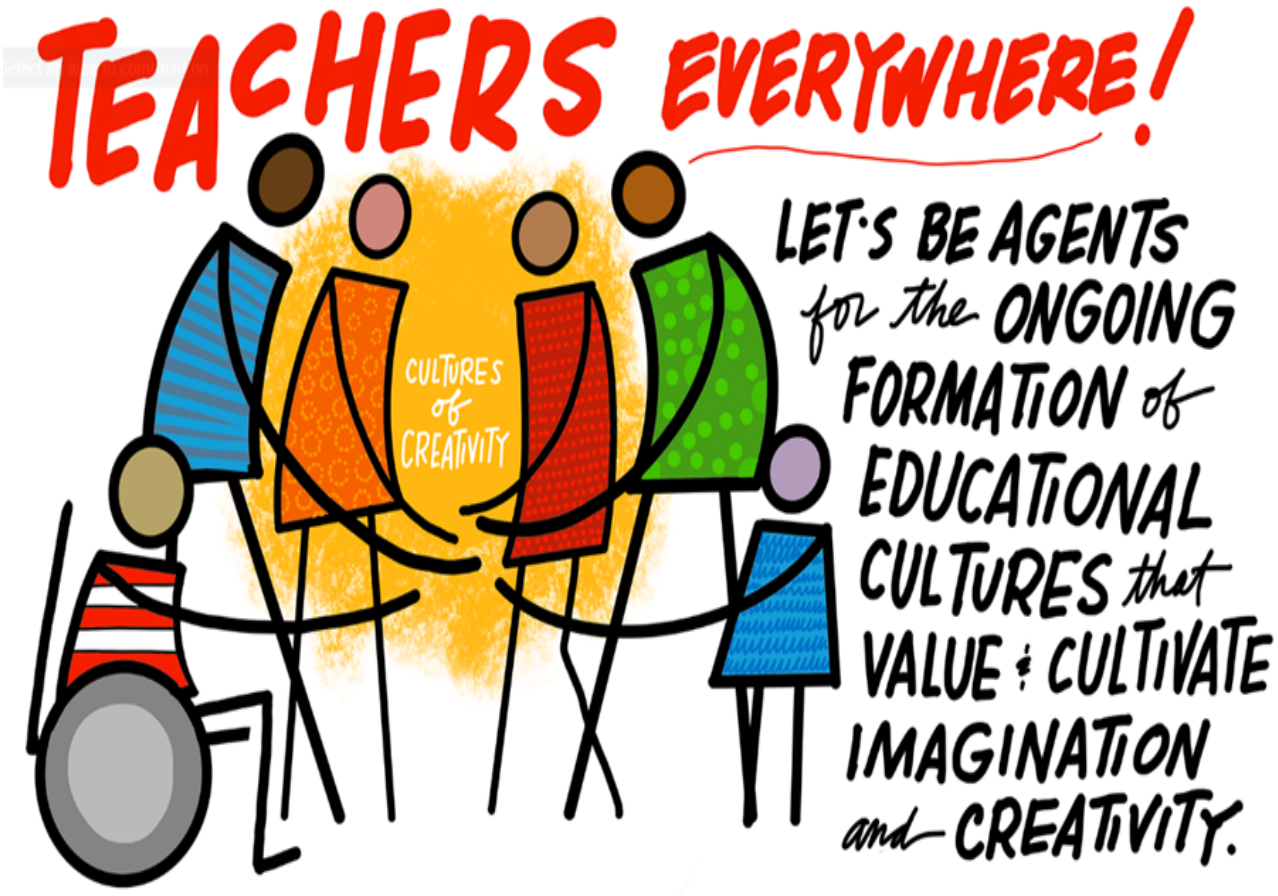

Why is Imagination Essential to Education and Learning?
Kieran Egan

Kieran is now retired. He was Professor of Education at Simon Fraser University and founder and director of the Imaginative Education Research Group. He has published many books and articles on imagination in education and learning including his major work *The Educated Mind* (1997). We are delighted that he has allowed us to include his excellent synthesis in our curated collection.

In this essay I argue for the acceptance of a richer conception of imagination, which sees it not as some particular intellectual function largely distinct from rationality, but rather as a flexibility, energy, and vividness of mind that imbues rational activity with life and richer meaning. A concept of imagination that resonates with the lead article in this issue of the magazine.[1] The essay explores some implications of taking this richer conception of imagination seriously in education, focusing on its role in resisting conventional, stereotypical thinking, in learning, in its relationship with memory and memorizing, in its connection with narrative and metaphor, in the development of social virtues such as tolerance, in its contribution to a sense of mental freedom, in its support of the idea of, and pursuit of, "objective" knowledge, of its connection with our emotional development, and in its relationship with visualization, originality, and creativity.

My purpose

This essay's title might seem to pose an odd question. The answer, or answers, might seem obvious. Everyone is generally in favour of imagination, considering it important as a quality that any educated person should display. Even so, it is worth trying to spell out the reasons why imagination is important to education and learning--why educators should take imagination seriously--in some detail. First, spelling out such reasons can help us design practices and environments that will more likely stimulate students' imaginations. Second, spelling them out can uncover perhaps surprising educational implications of our concept of imagination. Third, it is clear that our concept of imagination is complex and pervasive, and equally clear that people often mean rather different things by it, and so spelling out reasons for taking it seriously in education will help to clarify the range of implications it has. Fourth, the general and rather vague support for developing imagination in education is most commonly restricted to dealing with self-expression in the arts and with a rather anaemic sense of novelty in other areas of the curriculum; spelling out reasons why it is important to education might clarify its role throughout the curriculum. And, fifth, it must be said that the typical structures and practices of current schooling, as detailed in a wealth of reports, are designed according to principles which clearly do not consider imagination important to education.

Another way of considering why imagination is important to education is to examine the clichés that currently guide educational practice. To take a very prominent example, we are told that in teaching we must "start from where the students are." This is, like many similar clichés, the result of important insights, and we would obviously be foolish to ignore it. But once we accept its importance as a guide to practice and begin to think about it carefully, the clear guidance it appears to offer becomes a little problematic. Where "are" the students in a typical class?

Most commonly the principle embedded in the cliché is used to justify selecting curriculum content that is a part of the familiar environment to which students belong, as a starting point for units or lessons. It is also used to justify trying to describe students' stage of development, ability level, relevant prior knowledge, learning styles, and so on. These can obviously be beneficial in helping to plan effective teaching. But the most common uses of the principle with regard to curriculum content and to psychological conditions are also prone to interpretations that are educationally dysfunctional. The refinements of epistemological and psychological theories are commonly reduced to claims about "where students are" that seem to ignore the fact that students have imaginations.

These restricting stereotypes are brought under critical scrutiny once our assessment of "where students are" takes seriously their imaginative lives. Then, the notion that the most engaging content is to be found in their local environments and everyday experience looks entirely implausible, and that their logico-mathematical skills determine what they can have access to looks impoverished. This is not to suggest that there is no value in trying to assess students' cognitive skills, levels of development, learning styles and so on, nor in analysing what features of students' local environments and daily experience can play a connecting role to new knowledge. My point is, what were once important insights can degenerate into stereotypes that begin to undermine what they were originally intended to serve. The degeneration has occurred in these cases, I am suggesting, because their educational implementation has gone forward with too little, if any, attention to the characteristics of students' imaginative lives. My purpose in this essay is to reassert and raise awareness of the importance of attending to students' imaginations and to see how taking imagination seriously might affect some of our most common educational beliefs.

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What is the problem?

Somehow during the decades in which attempts were underway to make the study of education more rational by the application of philosophical methods and to make it scientific by the application of psychological methods, the central role of the imagination was lost sight of. Dewey's observation that the "*imagination is the medium of appreciation in every field*"[2 p236], and Warnock's claim that "*the cultivation of imagination ... should be the chief aim of education*"[3 p.9], represent views that have been central to our culture since the Romantic period (and indeed much longer when we recall how "imagination" then took over characteristics that had earlier been a part of the concept of "soul"[4], but they are views that educational discourse has failed adequately to incorporate. How the importance of imagination was displaced in educational discourse by the promises of educational philosophy and psychology--neither of which has dealt well with its slippery complexity--is not my concern here. We might expect, however, when putting imagination back into the centre of our discussion, to find some of the familiar topics of current educational discourse themselves occasionally displaced.

"Imagination" is not so clear and precise a concept that one can launch into an essay assuming that all readers agree about what it means. And yet we all use the word fairly confidently; confidently, that is, about more or less what we mean and that what we mean will be understood by others as what they more or less mean by the word. I think this confidence is not entirely misplaced. That is, we use "imagination" to refer to a range of capacities we share. There is, I suspect, a fair amount of intuitive agreement about what this range involves. Once we try to excavate it, and categorize it, and label the parts, however, we seem to create disagreements or, at least, dissatisfaction with the characterizations. The problem seems to lie in the complex and protean nature of imagination, and in the fact that imagination lies at the crux of those aspects of our lives that are least well understood. We have in common a capacity to hold images of what may not be present or even exist in our minds and to allow these images to affect us as though they were present and real. The nature of these images is very hard for us to describe, as they are unlike any other kinds of images we are familiar with in the "external" world. It seems, also, that people might experience these images quite differently--some having clear access to vivid quasi-pictorial images, some having such hazy experiences that the word "image" seems not really the right one. And the same person may be familiar with this range of what seem like different kinds or degrees of "images." It *"is one of those problems where everything is up for grabs, including precisely what the problem is"* [5 p5]. Imagination lies at a kind of crux where perception, memory, idea generation, emotion, metaphor, and no doubt other labelled features of our lives, intersect and interact[1]. Some of the images we experience seem "echoes" of what we have perceived, though we can change them, combine them, manipulate them to become like nothing we have ever perceived. Our memory seems to be able to transform perceptions and store their "echoes" in ways that do not always or perhaps very often require quasi-pictorial "images," (as in the cases of sounds and smells, say). Novelty in ideas has nearly always been connected with the powers of imagination to "see" solutions to problems. Our emotions seem tied to these mental images; when we imagine something we *feel* as though it is real or present, such that it seems our "coding" and "access" to images is tied in with our emotions. The logic of imagination seems to conform more readily with that of metaphor than with any scheme of rationality we can be explicit about.

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Each one of these topics is problematic, if not downright mysterious. Fortunately, one does not have to solve them all before we can say something useful about imagination in education— as many people have already demonstrated. I will rely on the general and common sense of imagination through this essay, leading, I hope, to some refinement of it in the conclusion.

Imagination and traditional educational practices

When we look at typical educational practice, we would be justified in assuming that the main purpose of education was to ensure that students accumulate knowledge, skills, and attitudes appropriate for the lives they are likely to lead. But when we look at the writings of the greatest educational thinkers we find that their main concern is rather different from this. If we consider Plato, Rousseau, and Dewey, for example, it is clear that the accumulation of knowledge and skills in the sense that seems to exercise our schools almost exclusively, is only a small part of what concerns them. What seems to be central to becoming educated in their view is not being bound by the conventional ideas and beliefs which people commonly grow up to accept. Education, they passionately assert, is about something that we typically attend very little to in our schools. Instilling knowledge is obviously not irrelevant to them, but their concerns with it are determined by the much more important question of how one enables a student to become an autonomous thinker, able to see conventional ideas for what they are. Education, to put it a bit tendentiously, is a process that awakens individuals to a kind of thought that enables them to imagine conditions other than those that exist or that have existed.

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The programs that these great educationalists proposed in order to carry young children to educated adulthood differ each from each others'. Plato proposed a tightly regimented curriculum taking fifty years to ensure freeing his best students' minds from the constrictions of *doxa* or conventional opinion. Rousseau proposed manipulating his student's every thought, and preventing him from learning to read until about twelve years old, so that he would not be infected by all the second-hand ideas of ordinary social discourse and of books. Dewey proposed methods of instruction designed to encourage students to adopt a scientific, inquiring and sceptical attitude.

Everyone recognizes that one function of schools is to socialize children, to have them understand, be familiar with, and value the conventional ideas and beliefs of the society of which they are becoming a part. Imagination without such a basis is mere wildness, and is unlikely to be fruitful to the individual or to the society. This is a common sentiment: "*We want the child not just to be imaginative, but also to be, in some sense, conventional, to learn and to some extent to participate in our shared thoughts, our shared form of life*"[6 p137].

Metaphors that are commonly used about educating beyond conventional socializing include "awakening" or "freeing" or "releasing." Mental life that is made up very largely of the conventional ideas and opinions of one's time and place is considered a kind of sleep or servitude. (Those who are most victims of this sleep or servitude are, of course, unconscious of their condition.) Plato talks of awakening the soul, or of freeing prisoners whose experience is of only shadows of reality. Such language constantly recurs in education to catch at that dimension of experience that education is crucially concerned with: *"To be able to imagine is to be able to be free of conventional appearances"* [7 p10-11]. Not "must be free" or "free of all conventions all the time," but "able to be free." A common form of the sentiment today is captured in the phrase: *"Education is not the filling of a pail, but the lighting of a fire."* (This is commonly, and falsely, attributed to W.B. Yeats, though a more likely source is Plutarch.) That is, education is the process that enables us, empowers us, to be not dominated by conventional appearances, ideas, beliefs, and practices. It provides the frame of mind in which we can perceive their utility and accept them as conditions of social life going forward, but in which we can also see their limits, their arbitrariness, and can imagine changing them should we deem it better.

This means, of course, that there is a constant tension in education between teaching the conventions whereby students will have to live and encouraging the capacities that enable them to gain some kind of mental freedom from those conventions — making them tools rather than constraints. This tension is prominent in the writings of the great educational thinkers, but unfortunately rather less prominent in many schools. The former part of the job, the socializing or inducting students into current conventions, seems to predominate. And this observation is not intended to underestimate how difficult it is to do even this job properly. The power to be free of these conventions tends to be cultivated much less, for many reasons: It is hard; we have no clear curriculum guidelines for achieving it; it clashes with what already takes up so much energy; and of course the school's bureaucratic needs for order and various kinds of regimentation exert subtle but powerful pressures against it.

Well, this is not intended to be a philosophical or sociological treatise, and I am perhaps wandering further than I need to emphasize the point that most of the great educational thinkers have seen the main enemy of education, not as ignorance, but as conventional thinking. Indeed, conventional minds may be encyclopaedically well-informed and perform superbly on scholastic achievement tests and have stratospherically elevated I.Q.s, and so on. A.N. Whitehead has referred to such people as the greatest bores on God's earth. What they lack, I am suggesting, is imagination, and this is a crucial *educational* deficit. Imagination is not opposed to conventional thinking, but it provides a kind of context or further dimension within which conventional thinking is controlled, and from which it can be transcended. It is not opposed to rationality, but is that which can give rational thinking life, energy, and enriched meaning. As Bowra puts it *"by exercising [one's] imagination [one] creates life and adds to the sum of living experience. [One] wishes to be not a passive observer but an active agent"* [8 p292].

So, a focus on the imagination reminds us that the forms of thought in which education is most lacking are also the forms of thought that have been the targets of the greatest educational thinkers. Their programs of education have not been proposed to prevent students being socialized and growing into the conventions of their time and place but have struggled to find ways of making sure that this process is accompanied by one which makes those conventions intellectual servants and not masters. And I am suggesting that today we can best further this aim by stimulating and developing students' imaginations.

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Imagination in learning

Since the invention of writing, we have developed elaborate means of storing information. One feature of these systems of storage and recall, whether on wax-tablets, parchment, in books, or in computers is that what you put in is what you get out. Human learning is in significant ways different from such storage and retrieval. But unfortunately our technologies influence the ways we think about ourselves. Certainly if you think about learning a fact— say, that water boils at 100 degrees celsius at sea level — and then repeating that fact later, what you have done looks very like what happens if the fact is recorded somewhere in symbols and then later retrieved. It just so happens that in this case the storage device is your brain and the retrieval mechanism is your memory.

If we allow our technologies to determine how we think about our intellectual processes then one effect, which has I think been pervasive and very damaging to education, is to think of learning as a process analogous to recording symbols in the mind for later retrieval. The first thing we might note is that the human mind seems to be very inefficient at this kind of recording and faithful preservation over time. A sheet of paper or a computer disk is much more reliable. Learning in this technology-analogous sense can be measured by how faithfully the records have been preserved when retrieved on a later test. This kind of testing goes on all the time in schools, and the results are taken very straightforwardly as evidence of learning. This has been going on so long and so ubiquitously in schools that the meaning of learning that is most common is this kind of mechanical storage and retrieval.

And what's wrong with that? Well, a number of things. Most generally what's wrong is that it ignores what is distinctive about human learning. In particular it leads to people forgetting that the human mind learns quite unlike the way a computer "learns," and that our memories are quite unlike computer "memories."

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The human mind does not simply store facts discretely when it learns. Perhaps it *can* do this, and we might occasionally use this capacity to remember a phone number or a shopping list in the absence of a piece of paper. More typically when we learn even the simplest fact, like for example that Vasco da Gama set off from Lisbon to sail around in Africa in 1497, arriving in India the following year, or that spiders have eight legs, we do not simply lodge these as discrete data in our brains. As they are learned they mix in with the complex of shifting emotions, memories, intentions, and so on that constitute our mental lives. Facts about spiders will gain an *affective* colouring connected with our feelings about insects in general and about spiders in particular. Vasco da Gama's voyages may trigger images of ships off alien coasts and the sense of adventure. Whether and *how* we learn and retain these particular facts is affected by the complex of meaning-structures we already have in place, which in turn are affected by our emotions, intentions, and so on.

The human memory is not an orderly place with slots or shelves for each item to remain inertly until called for. It is more like a shifting turmoil stirred by those emotions and intentions that are a part of us. Virtually nothing emerges from the human memory in the same form it was initially learned. All kinds of associations curl around each new fact, there is endless blending and coalescing, and connections are made, broken, and remade. And no small part of this activity involves the imagination.
It is becoming clear that human learning does not involve simply mirroring what is outside the mind, but crucially involves *constructing* or *composing* [9]. Each mind is different and is a different perspective on the world. In the process of learning, the student has to fit whatever is to be learned into his or her unique complex of meaning-structures that are already in place. This requires restructuring, composition, and reassessment of meanings. And it is in this *ascribing of meaning* that Warnock[3] identifies one of the fundamental activities of imagination – put another way this is the 'fundamental work of imagination'.
So taking imagination seriously and then considering learning in the light of our developing conception of imagination we are focused onto those aspects of learning that emphasize meaning. Meaning does not reside in the facts themselves, or in the skills or whatever it is we learn, but in the interaction between what is learnt and our minds. And our minds are not simple depositories for facts, but centres of constant activity in which emotions, intentions, memories all intermingle with what is newly learnt to give it meaning.

This might seem to make the casual concept of learning so hopelessly tangled that the simplistic concept common in education today seems preferable, despite the educational cost. If we can't teach that a spider has eight legs without involving emotions, intentions, meaning-structures (whatever they are) *and* imagination then we might prefer to throw in the towel. I think the problem is not so bad; we don't somehow have to juggle all these sets of complex mental elements just to talk about learning. Rather we just have to remember that human learning is something quite different from storing information and bearing this in mind is not at all difficult. The difficult part, I think, is in taking seriously its implications. And this is where taking imagination seriously begins to play havoc with some of the familiar established elements of the current educational scene. All those procedures of teaching, testing, and curriculum that see education as a process of accumulating knowledge and skills uninvolved with emotions, intentions, human meaning, and imagination, will tend to be inadequate to do more than create conventional thinkers and not educated people.

Imagination and memory

From the writings of Aristotle on, there has been in western culture a long connection between memory and imagination. This connection is not merely an historical curiosity but remains crucially important for education today. There is a tendency that has grown out of the rhetoric of progressivism to consider that "rote-learning," or learning in the conventional sense discussed above, is educationally useless. The valuable insight in this, about the pointlessness of treating students like storage devices for knowledge that is meaningless to them, has tended to be uncritically generalized to a hostility to any kind of memorization. One of the clear implications of the consistent observation of the relationship between memory and imagination is the importance of memorizing knowledge, facts, chunks of prose and poetry, formulae, etc. for the stimulation and development of the imagination. Ignorance, in short, starves the imagination. And we are ignorant of all that knowledge which we might know how to access, but haven't, or which we have learned how to learn, but haven't. Only knowledge in our memories is accessible to the action of the imagination.

This principle might seem to run into conflict with that of the previous section. There I seem to be arguing that the imagination is suppressed if students are set to learn lots of knowledge and skills and here I am claiming that the imagination requires the memorization of lots of knowledge and skills to be adequately stimulated. The two principles are consistent when we observe the point made above about the meaningfulness of the knowledge and skills that are to be memorized; ensuring that knowledge and skills are meaningful requires engaging the imagination in the process of learning. How we can go about ensuring this kind of imaginative learning would require much more space than an essay provides [10-12]. What it is important to establish here, however, is that the development of students' imaginations will not go forward without their learning and memorizing much and diverse knowledge.

This has been a constant theme in what have been called "neo-conservative" educational writings during the late 1980s [13,14,15]. The emphasis in these neo-conservative writings has been to make the valuable point that education is crucially tied up with knowledge, and that being educated means, put crudely, knowing a lot. I thought something seems to have become confused in current educational thinking when I heard a speaker at a conference recently say, a little crossly, that "'Knowledge' is not a dirty

word in Education". But, as I stressed above, it means not only that. Education is also crucially about the *meaning* knowledge has for the individual, and that is where the imagination is vital. A person who has meticulously followed the neo-conservative kind of curriculum may still end up among the greatest bores on God's earth. What is absent from those books is attention to, and a clear sense of, how knowledge becomes meaningful in the lives of learners; how we can ensure that students engage, in the sense I am developing the phrase here, in *imaginative* learning.

In oral cultures one knows only what one can remember. And so techniques that made memorization easier were of great social importance. Among the techniques invented or discovered were rhyme, rhythm, and meter. That is, it was discovered that knowledge put in a rhythmic, rhyming pattern was easier to remember than otherwise. It was also discovered that if one coded the information; one's tribal lore; in vivid images, it was still more easily memorable. We see such coding in vivid images in the myth stories of the world. It seems fair to say, then, that it was the need to memorize that first stimulated and developed many of those capacities we now label imagination. Patterning of sound, vivid images, and story structuring were among the most important early social inventions. It was these technical linguistic tools and their effects on the mind that helped human groups to cohere and remain relatively stable through unknown generations[16-20]. As I have explored elsewhere[10], these are not discoveries only of relevance to oral cultures long ago. Their social importance was a function of their effects on the human mind, and while we do not have the same social reliance on these techniques, they nevertheless still play important psychological roles for us. They can guide us in the task of ensuring imaginative learning and imaginative memorizing. That is, they can be used in learning so that they help the memory's task of creating sense and order and meaning among its shifting contents.

Imagination and the narrative mind

Brian Sutton-Smith's stark claim that "the mind is ... a narrative concern" [7 p. 22] expresses a view that is becoming increasingly widely accepted. It confronts the long-assumed view that the mind is, when functioning productively and properly, a logical concern working with abstract concepts. Reason was thus taken as evident only in limited logical operations. Increasingly these operations are seen as themselves grounded in and growing out of narrative and metaphoric bases [21]. When someone could talk of a parent's reasonless love for a child, the sense of reason was restricted to what could be demonstrated in something like a formal logical fashion. A parent's love for a child is entirely reasonable, once we rescue "reason" from the prison it has been in and reconnect it to the imagination. Without this connection it is desiccated and more close to a form of calculation than to the richness and complexity of human reason as it operates in the narratives of our lives.

As it becomes clearer that the mind functions as a whole, and that this whole includes our bodies, then the sense of the mind as an elaborate calculating organ and reason as its calculations becomes increasingly untenable. It becomes clear that rationality is not a set of skills one can train but is rather tied up with all these hitherto neglected attics, basements, and hidden rooms of the mind, in which emotions, intentions, metaphors, and the imagination, cavort. And so it has been rediscovered that we make sense of the world and of our experience in narratives, that we can recall items in narrative structures better than in logically organized lists, that we more profoundly code knowledge in our memories by affective than by logical associations, that young children deal more readily and flexibly with metaphor than do older, schooled children, and so on and on.

The rediscovery of the narrative mind encourages us to pay more attention to imagination, because the imagination is more evident in the composition of narratives and in perceiving their coherence. Learning to follow narratives is thus seen to involve the development of more significant intellectual capacities than has traditionally been recognized. In particular, to quote Northrop Frye, "The art of listening to stories is a basic training for the imagination" [22 p. 49]. The ability to follow stories stimulates and develops the narrative mode of the mind, and its sense-making, meaning-making capacities. Many and varied stories can help to make more sophisticated our grasp on and use of metaphor, which is the connecting logic of narrative and which is a central component in the causality which holds stories together. The causality of stories involves both logical and emotional components together. That is, in stories the sequencing of events that are intelligible, that make sense, is not simply logical, though they have to be so in part, but it also involves an affective pattern. We jump from, say, the scene where Cinderella sees the sisters off to the ball to that in which the Fairy Godmother arrives. Following a purely logical causal sequence we might have to witness some dish-washing or dusting or coal-heaving or whatever, but the affective causality makes the connection between the two scenes immediate and directly comprehensible. Learning to follow stories is to develop these mental capacities: James Joyce's Ulysses and Finnegan's Wake only become comprehensible as the story develops. Such sophistications of narrative comprehension become available for making sense of our own experience and of the world we find ourselves in.

The development of the narrative capacities of the mind, of its ready use of metaphor, of its integration of cognitive and affective, of its sense-making and meaning-making, and of its overarching imagination, is of educational importance because these capacities are so central to our capacity to make meaning out of experience. Our lives are "understood as embodying a certain type of narrative structure" [23 p 163.] Any event or behaviour has no meaning by itself; it "becomes intelligible by finding its place in a narrative" [23 p196]. Barbara Hardy puts it emphatically: "We dream in narrative, daydream in narrative, remember, anticipate, hope, despair, believe, doubt, plan, revise, criticize, construct, gossip, learn, hate and live by narrative" [24 p. 5.]

So, in as far as we want the world to be intelligible to students, and in as far as we value the elements of the list Barbara Hardy gives us above, the stimulation and development of the narrative mode of mind is educationally vital. And this mode, born out of stories to help us remember, is the domain in which the imagination is indispensable.

Developing the narrative mode of the mind tends to receive less emphasis in schools because it is not seen to be productive, in the way that developing logico-mathematical skills is seen to be productive. The utilitarian role of schools communicates itself to children very readily. Nearly all children when asked why they go to school reply "To get a job"[25]. Frye notes that "Every child realizes that literature is taking him [or her] in a different direction from the immediately useful, and a good many children complain loudly about this" [22 p 2]. One role of education is to clarify for children that the life of the imagination offers rewards that are indeed not immediately useful but that are worthwhile. And, most significantly for education, access to narratives seems possible for everyone, literate or not, and they provide an obvious route to all kinds of knowledge. Educators might wisely develop "a respect for narrative as everyone's rock-bottom capacity, but also as the universal gift, to be shared with others"[26 p.30].

Imagination and social virtues

I want to add to the list of educational values that follow from the development of the imagination such social virtues as tolerance and justice. Of course it would be too much to say that the evils of the world are due simply to a lack of imagination, but some of them seem to be so. The lack of that capacity of the imagination that enables us to understand that other people are unique, distinct, and autonomous with lives and hopes and fears quite as real and important as our own is evident in much evil. The development of that imaginative insight does not, however, guarantee that we will then treat them as we wish to be treated ourselves, but it is a necessary prerequisite.

But there are more particular connections to be made between the imagination and social virtues. To pick up on MacIntyre's point in the previous section, the ability to follow stories is connected with the ability to make sense of human experience because our lives are intelligible only within narratives observing that "man is in his actions and practice, as well as in his fictions, essentially a story-telling animal" 23 p. 201 he points out a complexity of our fiction-making. It is not merely a mode of entertainment but is complicit in how we make sense of ourselves and how we behave as social animals: "There is no way to give us an understanding of any society, including our own, except through the stock of stories which constitute its initial dramatic resources. Mythology, in its original sense, is at the heart of things. Vico was right and so was Joyce. And so too of course is that moral tradition from heroic stories to its medieval heirs according to which the telling of stories has a key part in educating us into the virtues" [24 p. 201].

Stories are good for "educating us into the virtues" because the story not only conveys information and describes events and actions but because it also engages our emotions. From Plato on, the power of stories to engage, and to engage the commitment of, their hearers has been clear. And it is that power that has made some wary or fearful of them, particularly in educating the young. The powerful stories of the world do not simply describe a range of human qualities, but they make us somehow a part of those qualities. They hold up for us, and draw us into, feeling what it would be like to make those qualities a part of our selves. In this way stories are the tool we have for showing others what it is like to feel as we do and for us to find out what it is like to feel as others do. The story, in short, is "the ability to exchange experiences" [27p.83]. Such stories become, simply, a part of us; as Robert Coles quotes one of his students: "in a story--oh, like it says in the Bible, the word became flesh" [26p. 128].

By imaginatively feeling what it would be like to be other than oneself, one begins to develop a prerequisite for treating others with as much respect as one treats oneself. Prejudice, in the religious, class, or racial forms which we see it so commonly, may be seen in part at least as a failure of imaginative development.

The story's power to engage the imagination and contribute thereby to tolerance and a sense of justice needs to be balanced, of course, with its power to do the opposite as well. If the story is one of, say, Aryan superiority and a Nazi salvation, then it can have an equal grasp on the imagination and lead to quite the opposite of toleration and social justice.

- What is the protection against this kind of abuse? There seem to me two. The more trivial, recommended by Plato and so many others since, is that we be careful to tell the right kind of stories to children. The more important protection comes from the stimulation of the imagination by a rich and varied stock of stories, as suggested in the previous section. Vulnerability to stories like that of the Nazi's is a result, in part at least, of a mind unfamiliar with, and unsophisticated by, the stock of stories that constitute the culture's resources. The value of familiarity with the stock of stories and the kind of sophistication it brings is that one can understand the fictiveness of stories. The Nazi story is compelling only to people who do not understand fictions and how they work. Not that this is an easy lesson, yielding tidy distinctions between our fictions and reality, but the degree to which we become familiar with the range of stories available in our culture, to that degree we inoculate ourselves against confusing fiction and reality.

- Literature is most commonly assumed to be the part of the curriculum in which we become acquainted with some of the great stories of our culture. Proponents of the educational value of literary studies also commonly argue that they can lead to social virtues. Northrop Frye certainly makes this argument eloquently. After demonstrating various ways in which literature stimulates and develops the imagination, he concludes: "one of the most obvious uses [of imagination] is its encouragement of tolerance. In the imagination our own beliefs are also only possibilities, but we can also see the possibilities in the beliefs of others ... what produces the tolerance is the power of detachment in the imagination, where things are removed just out of reach of belief and action" [22 p. 32].

While literature undoubtedly has such a role in encouraging some social virtues, I think we tend to forget that among the great stories of our culture are those expressed in our science, and mathematics, and history, and so on. Mathematics and science can, if imaginatively taught, build a narrative which provides the student with a context within which the student's life and self become objects to be understood like other objects in the world. The narrative of our science can also contribute importantly to that "detachment in the imagination" that can lead to tolerance and justice.

Imagination and freedom

Some of the earliest stories of the Hebrew and Greek traditions associated the imagination with acts of disobedience that aimed to enlarge or led to enlarging human powers, in particular the power to imagine and plan a future different from the past. I am thinking particularly of Adam and Eve eating the fruit of the tree of knowledge and of Prometheus stealing the gods' fire. This sense of being able to make choices and to make the world more nearly like what one's heart desires has long been considered central to whatever it is in human beings that makes us feel freer than we assume animals or vegetables are. Their lives seem more determined or conditioned by their genetic heritage and their environment. We too are similarly constrained, of course, but nevertheless believe that there is some part of us that can plan and shape our behaviour in ways that feel some element of freedom.

At a trivial level this is evident in daydreaming. I may imagine myself taller, handsomer, richer, more powerful, stronger even than I already am — a prodigious feat of imagination in the Walter Mitty tradition. No doubt some genetic defect or early environmental deprivation may predispose me to this kind of daydreaming, but I can choose to be blond in my daydream rather than dark, or rather than bald. The sense of freedom in these choices, and in the scenes we can project onto our inner mental cinema, may be in some degree illusory. Whether it is or not, it remains a capacity connected with our ability to imagine a different future and to plan and bring about the conditions for that different future. Being able to change the world around us in ways we find desirable and satisfactory is clearly an important capacity. It is what gives us our sense of freedom, illusory or not, and we sensibly value it. As it is a capacity whose strength or weakness turns on the strength or weakness of our imaginations, then clearly we will want to strengthen our imaginations in order to enhance our sense of freedom and enhance the powers that go with it. A well-developed imagination helps us to feel unsubdued by habit, unshackled by custom, in Coleridge's nice phrase.

"Imagination is what allows us to envision possibilities in or beyond the actualities in which we are immersed" is how Hanson sums up Sartre's general claim about the imagination's role in our sense of freedom[6 p.138]. We have many accounts by survivors of appalling catastrophes and conditions which eloquently give credit for their survival to their envisioning possibilities beyond those in which they were immersed. Prisoners, and particularly concentration camp survivors, have consistently given witness that, despite the most terrible constraints, powerful imaginations can preserve a vivifying sense of mental freedom.

Hanson makes a further point, of some importance to education: "Imagination, then, is to be prized and nurtured because of its link to freedom; but, as is often the case, this exercise of freedom will be most productive if it is disciplined" [6 p. 139]. While we may value the mental capacity that can find expression in daydreaming, we might reasonably conclude that its exercise only in daydreaming is something of a waste. This is not to denigrate daydreaming--which seems to me generally a happy activity, rather underestimated. But the imagination needs also to be engaged with reality. The *disciplines* we have developed for trying to secure a sense of reality are areas within which the imagination can be disciplined. That is, physics, mathematics, and history, for example, are not disciplines to be learned separately from our imaginative growth. The imagination has to grow *in* these disciplines, so that their grasp on the world is enriched with meaning, and the imagination can recognize and work within the grasp they can gain on reality.

Imagination and objective knowledge

Imagination is commonly considered quite distinct from whatever mental acts are involved in our attempts to gain objective knowledge. The rich sense of imagination we have inherited, however, seems to lead to the conclusion that quite the opposite is the case. The imagination thus should more properly be seen as one of our major tools in the pursuit of objective knowledge, and indeed as establishing the very conditions of objectivity.

One route to justifying this still uncommon view may be taken through a point Ruth Mock makes: *"In the arts and sciences creative imagination demands that an individual frees himself from his immediate preoccupations and associates himself with the medium he is using--the paint, wood, or stone for the painter or sculptor, the words for the writer, the sounds for the musician or the facts for the scientist--so that with it he creates a new form which may to some extent be unexpected even to himself"* [28 p. 21].

What is important for my point here is the observation about the imagination's capacity to inhabit, as it were, the external objects with which it engages. We may see ourselves as distinct beings carving stone, say. But the experienced carver with a well educated imagination mentally extends into the material being worked, knowing what it is like to break here rather than there, how a stroke here will sheer away whatever is below, and so on. That is, the imaginative sculptor— or mathematician or historian or whatever--becomes in a curious sense one with the materials he or she is working. They feel in high degree something of what Michael Polanyi has described as a part of "tacit knowledge"[29]— we feel through the tools and objects we work with; they become extensions of our senses and as such incorporated into our imaginations. And it is not just that the stone, say, becomes an extension of ourselves, but that we become an extension of the stone; our minds conform with the nature of the objects that they seek to incorporate, whether those objects are stone and paint, or mathematical symbols, or historical events, or astrophysical phenomena. The world is not objects out there; in as far as we can know the world it is within us by means of that curiously reciprocal arrangement whereby we also extend ourselves imaginatively into it.

Well, this is rather airy-fairy language, of course, but it is so because we cannot adequately describe even the simplest functions of our minds with notable clarity, and the more complex can only be pointed at or indicated in such vague terms as above, in the hope that others will find the pointing and indicating sufficient for them to recognize in their own experience what is meant.

Any area of knowledge, skill, or practice has its own requirements for some form of objectivity; each area has its distinctive rules, structures, forms, nature, such that our understanding is made up in some significant degree in making our minds conform to them. And while in each area of knowledge, skill, and practice these requirements are different, what is common to them all is their call on the imagination. Objectivity relies on the imaginative capacity to inhabit the forms of the materials, knowledge, skill, or practice one works in.

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I think this connection between imagination and objectivity is supported by the connection we commonly make between objectivity and being unprejudiced or being a just judge. We value having someone unprejudiced and objective judge many matters of conflicting interests. Such objectivity draws on the imaginative capacity to see the world from other than the limited perspective of one's own interests. And this is essential not just in relation to the social virtues mentioned earlier, but it is a necessary component in adequately understanding any area of knowledge. As such, development of those imaginative capacities that support objectivity is of importance to education.

Imagination and emotion

The importance of emotional development to education is no doubt obvious to everyone, and connections between the emotions and imagination are more evident, even in the rather restricted sense of imagination common in educational writing. However superbly skilled or knowledgeable people are, if they lack emotional maturity we recognize them as inadequately educated. Emotional immaturity is a damage which seeps into all aspects of one's life. To suggest that emotional immaturity need not interfere with the development of rationality is to accept, as has been quite common, the desiccated sense of rationality that has been so destructive to education during the twentieth century. This dessicated sense of rationality has been the focus of most schooling activity, and the belief that reason and emotion were separable parts of us has enabled whatever affects our emotional lives to be made subservient. Taking imagination seriously brings into question the assumptions on which the side-lining of emotions in schooling has been based.

The discourse of education seems to assume that we have an intellectual part of us and an emotional part of us, or a cognitive and affective part, and that these can sensibly be separated. It has become at least operationally the case that schooling is responsible primarily for the cognitive or intellectual part. One can, of course, try to ignore the affective dimensions of, say, mathematics and treat that area of human experience as a purely cognitive set of procedures to be learnt. What is achieved by so doing is at best to make mathematics something of merely utilitarian value and to destroy its other potential values to our lives. The great wonder and fun of mathematics is largely destroyed in schooling for nearly everybody, including for those who are "good at it" when it is taught in the typical dessicated way. Some lucky few can discover the pleasures of mathematics as adults, but for most it remains merely as something that is useful when making change or keeping accounts.

The wasteland called school mathematics is perhaps the most obvious casualty of the attempt to separate something deemed rational, cognitive, intellectual from imagination and emotion. The result is a disaster because it is built on assumptions about human learners that are false. The task we face is not simply to point out that mathematics is a passionate affair which can become engaging and meaningful only when students' imaginations make contact with the passion within it. The problem is that the very language of educational discourse is so infected with assumptions and presuppositions that need to be uprooted and challenged that people have great difficulty grasping how mathematics could be different from the way it presently is. For most people mathematics *is* what is in the textbooks. How we might re-inject imagination and emotion into such a mathematics generates a blank, because the textbooks *presuppose* that imagination and emotion are largely irrelevant to mathematics. This belief persists despite the very plain passion and imaginative genius of those people who generated the mathematical knowledge that is embalmed in textbooks.

The separation of emotion and intellect, I have argued already, has been educationally dysfunctional. We need to recapture Wordsworth's sense of imagination as "Reason in her most exalted mood" (*The Prelude*, XIV, 192), and see the force of Frye's observation that "the combination of emotion and intellect we call imagination" [22 p.157]. Taking imagination seriously in education directs us to transcend the intellect/emotion split and perceive both together in all areas of knowledge and all aspects of education. Our emotional lives are tied to our imaginations which are tied to our intellects. Imaginative learning, then, inevitably involves our emotions. Imagination is important to education because it compels us to recognize that forms of teaching and learning that are disconnected from our emotions are educationally barren.

Now, none of this is to suggest that typical classrooms are in future to be a flood with tears, wailing, and wild joy all day long. Rather, that whatever content is to be dealt with needs to be attached to students' emotions in some way, or that the human emotions that generated the content in the first place, or that attach to it in whatever way, need to be a part of what is dealt with in the class. (Elsewhere I have tried to show how this can be routinely achieved: [10, 11, 12, 31]).

Visualization, originality, and creativity

These three topics are being squeezed together into a single brief section. At the beginning of this essay I noted that everyone is generally in favour of imagination and, it seems fair to say, it is the association of imagination with visualization, originality, and creativity that probably accounts for the bulk of support for its development in education. If I pass over these topics with just the briefest mention, it is not because I consider them unimportant, but simply that their importance, and their connection with imagination, seems to be already widely recognized.

Ted Hughes has observed that "the word imagination usually denotes not much more than the faculty of creating a picture of something in our heads and holding it there while we think about it"[32 p35]. This common, restricted, sense of imagination denotes a faculty that can be developed by practice, and that has already been incorporated into various techniques of educational value. The teacher can encourage students to form mental images of whatever is the subject of a lesson, concentrate on the images, elaborate them or move them, and then turn to writing or experimenting or whatever is the appropriate activity. There are many accounts in the educational literature reporting how successful a stimulus this kind of visualizing exercise can be. The teacher can make suggestions for elaborating or making more precise students' mental images, but an important ingredient is some silent time. A related development of the basic image forming capacity is available in the technique commonly called Guided Imagery. This is used most in social studies, as far as one can judge from the literature about it. In this case, as the name suggests, the images are stimulated by the teacher's descriptions, and the students follow a verbal account that details sights, sounds, tastes, and smells, creating for themselves as vivid an internal cinematic projection as they can. I have found that this particular form of engaging the imagination, with historical content in particular, can be immensely stimulating for students.

The importance of originality and creativity and their close relationship with imagination are sufficiently commonly made that I need add nothing. Perhaps I might, however, take away something. What seems to have become accepted as exemplifying originality and creativity most clearly is what seems to me a contextless novelty. This is most evident in what are called "creativity tests." What they test seems to be the ability to express, without any meaningful context or productive purpose, novel expressions or ideas or uses for objects [33]. While this may obviously require imagination, it seems to make no special call on the creative imagination. Encouraging rapid changes of focus and novel images seems as likely to discourage creativity as stimulate it. As Brian Sutton-Smith puts it: "this incessant distraction actually inhibits the real development of creativity by constantly distracting the children from one stimulus to the next, preventing the concentration and familiarity that creativity requires" [7 p.17]. At least, one might be wary of tests that seem to embody conceptions of imagination and creativity that lack most of the complex characteristics explored above.

Conclusion

I have included a wide range of features in this attempt to sketch reasons why imagination is important to education and learning. Perhaps some of you might feel that I have included too much, and that the result is a sense of imagination being involved in everything of educational importance. Such a reading would not mistake my intention, but I would want to argue that this sense would not include too much. Indeed, I think imagination should properly be very pervasive in education and learning. Such a view is difficult to take only if we think of imagination as a *thing*, as a particular, distinct part of the mind. If we see it rather as a particular kind of flexibility, energy, and vividness which can imbue all mental functions, as a kind of mood of mind, then its role in all the topics I have mentioned above becomes easier to understand. To be imaginative, then, is not to have a particular function highly developed, but it is to have heightened capacity in all mental functions. It is not, in particular, something distinct from reason, but rather it is what gives reason flexibility, energy, and vividness. It makes all mental life more meaningful; it makes life more abundant. John Dewey expressed this sense of the pervasiveness of imagination this way: "Imagination is as much a normal and integral part of human activity as is muscular movement"[2 p237].

An association of our current rich conception of imagination with Romanticism and romance perhaps merits a final brief note. One of the central romantic images is of the heroic journey as an allegory of our lives. It might be useful to let this image colour our sense of a more imaginative kind of education than is commonly provided today. The process of education and of learning throughout our whole life would thus be seen, quite properly, as an heroic journey, full of wonders, mysteries, dangers, obstacles, and so on. While schooling today might not readily evoke such an image, nevertheless education as an heroic journey gives us a sense of the direction in which we might try to move schools. And for those who would like to make schooling more like an

imaginative and heroic journey for students, they may take heart in seeing their own present struggles as also an heroic journey, through the tangles of debased educational language and the obstacles of institutionalized commitments to narrow conformity and utility, in the direction of something more wonderful.

Acknowledgements

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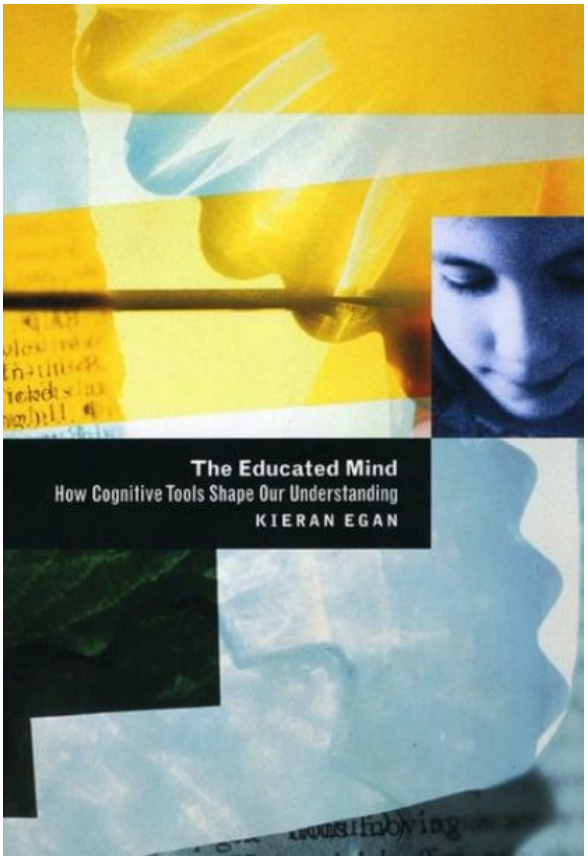
The Educated Mind
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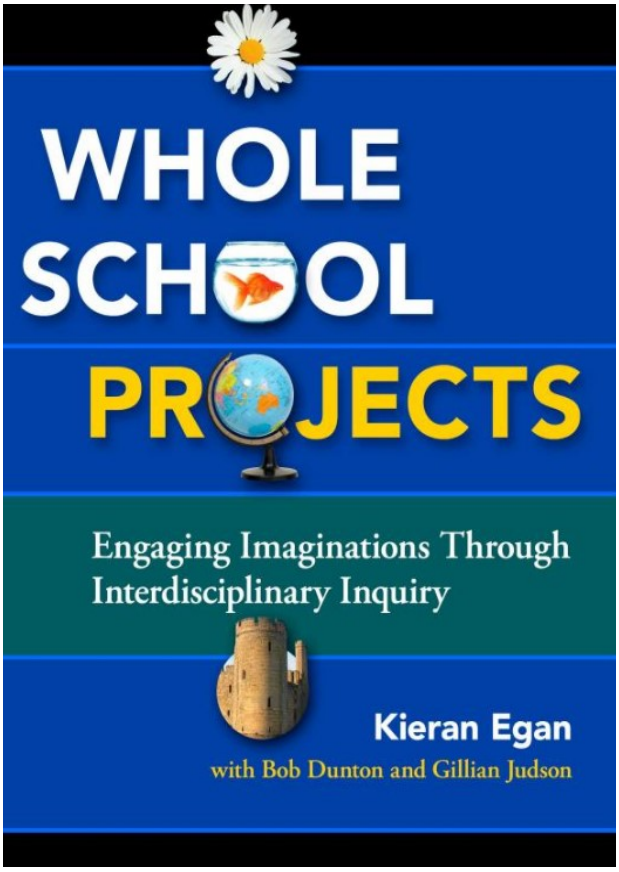
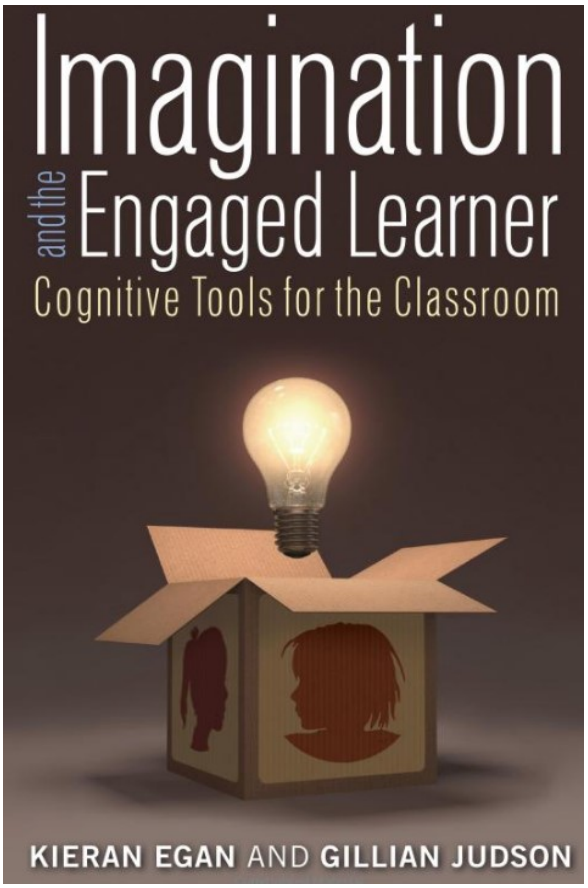
KIERAN EGAN


WHOLE SCHOOL PROJECTS
Engaging Imaginations Through Interdisciplinary Inquiry
Kieran Egan
with Bob Dunton and Gillian Judson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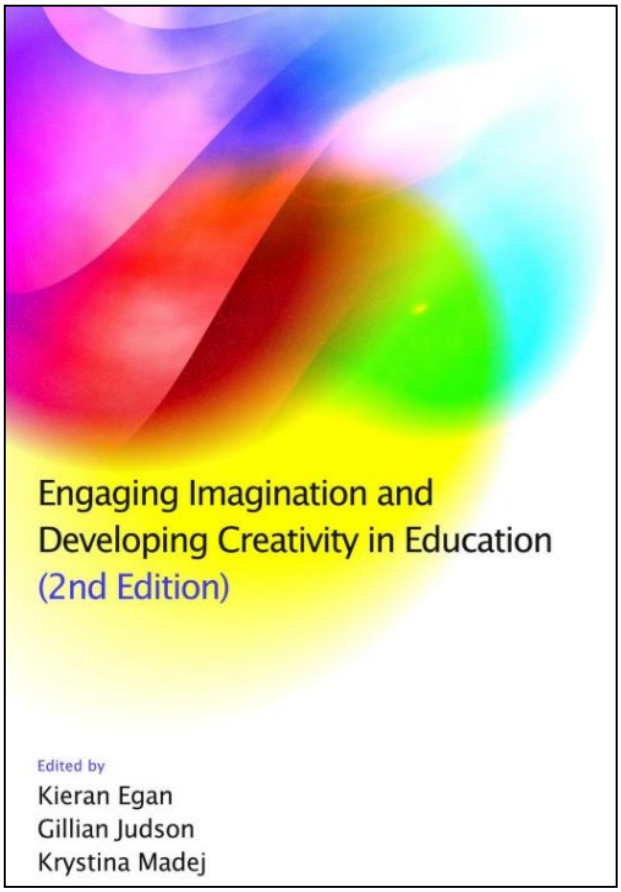

Engaging Imagination and Developing Creativity in Education
(2nd Edition)
Edited by
Kieran Egan
Gillian Judson
Krystina Madej

T.E.A.C.H. The Work of My Imagination as an Educator

Gillian Judson

Gillian is an educator and member of the Education Faculty at Simon Fraser University (SFU), Canada. She teaches an imagination-focused approach to teaching called Imaginative Education (IE) and the specific ways to engage imagination in learning **all** aspects of the curriculum. She is also Executive Director of the Centre for Imagination in Research, Culture and Education (CIRCE) and the primary energiser and catalyst behind the creation, direction, and expansion of **imaginED** and the network of educators it supports. In September 2020 she begins work as an Assistant Professor in Educational Leadership at SFU. She works energetically and enthusiastically to enable teachers in schools, colleges and universities to develop imagination-rich educational practices.

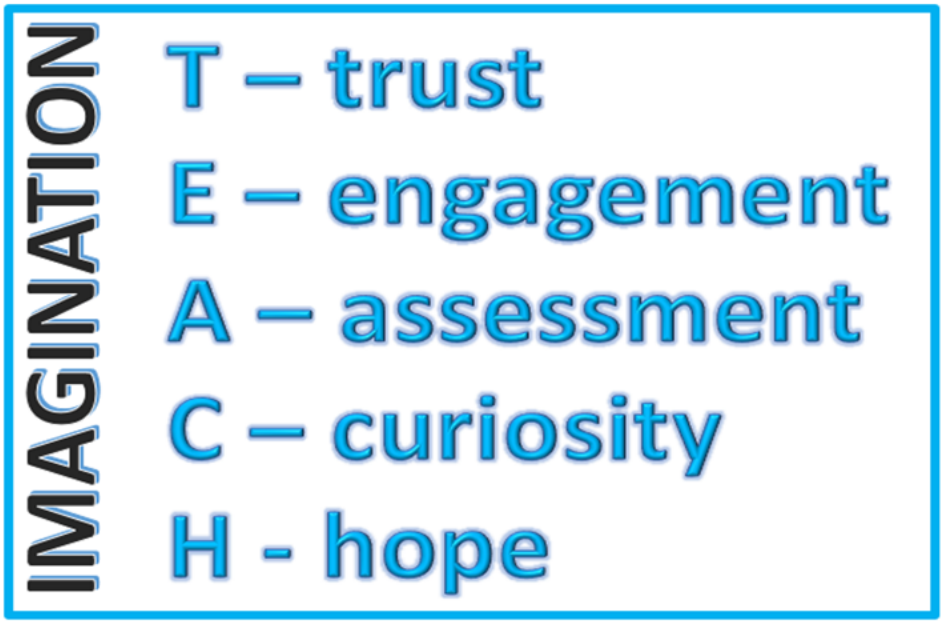
Saanich is a rural municipality on the southern tip of Vancouver Island in B.C., Canada. In 2015 I returned to Saanich and to the arbutus-filled acreage where I grew up. I ran my hand over the smooth bark of an arbutus tree, one still growing on the property, much bigger now than when I was last there. The cool, silky texture of the bark, the look of the knotted and twisting branches, and the patterning created on the leaf-strewn ground beneath the tree evoked some powerful, emotionally-charged images in my mind. Growing up, we used, abused and ultimately adored, the arbutus trees on the land. We peeled their bark and—I now shudder to recall—carved messages into their trunks. We also cut some of the trees down, clearing land for our driveway and home, for running trails, using some of their wood for our stove. We had a rope swing attached to the biggest arbutus on the property. It supported our daring swings out over the land below. Under the arbutus trees were the paths we ran, the imposing fortresses we built, the hiding places we felt no one would ever find. I recall being mesmerized by the soft, dancing patterns cast by the sunlight as it streamed through the arbutus branches. The trees offered welcome shade in the afternoons, a canopy of broken light protecting me from the sun's rays. By night, the arbutus leaves, on twisted branches, created dancing patterns against the darkening sky.[1]

A few years ago I discovered a dust-covered cardboard box on a shelf in my parent's basement. It contained a collection of my old elementary and middle school assignments. I was surprised to find repeated sketches of arbutus trees in many of my old exercise books. I found several poems I had written about arbutus trees. My old journal had a fading photograph of an arbutus tree glued to its inside cover. I discovered a "legend" I wrote in Grade 5 about why the arbutus loses its bark. These findings surprised me; I had forgotten how much these trees engaged and inspired me as a child.

My imagination enables me to travel back in time to engage long forgotten childhood memories and feelings. Today, as an educator, one of my passions is to help learners form emotional and imaginative connections with the natural world. I know that the learner and teacher that I am today has been significantly impacted by the gnarly arbutus and the natural context, the Place, where I grew up. The imagination is crucial in enabling us to remain aware of who we once were. It enables us to maintain our historical biography that is so important to our evolving identity. These gnarly trees are inextricably part of my identity and the imagination that inspires my life and my professional choices and actions.

I've been thinking about the myriad ways in which imagination works in my life—whether my life as a wife, mom, daughter, friend, teacher, researcher, writer, referee (I'm a mom). Looking back on a post I wrote a few years ago about my 5 top "teaching needs", I realize that all of my teaching "needs"—Trust, Engagement, Assessment, Curiosity and Hope—are driven and supported by my imagination.

Figure 1 TEACH My 5 "essentials" for effective teaching



I need Trust

We know that the world works—quite literally—because of relationships. We also know that a primary—if not *the* primary—determinant of students' academic success has to do with the relationships they cultivate in and with the learning environment and the people in it. When I teach I strive to nurture strong, positive interpersonal relationships*. The work of imagination enables empathy to support these interpersonal relationships. Where would we be without the ability to take on (or try to do so) another's perspective? How would we do this sensitive relational work without imagination?*

Moreover, when I teach I also strive to nurture pedagogical relationships; these are emotional connections between my students and the knowledge they are learning. The flourishing of both of these kinds of relationships depends on trust. I can only get to know my students if they trust me. If my students trust in my intention to support their learning process, I can challenge them. I can encourage them to take risks in their learning. I aim to push my students outside of their "comfort zone"—a pedagogy of discomfort! My students need to know I have their best interests at heart if they are going to learn and enjoy new ideas, new ways of being, unfamiliar terrain etc. They need to see me modeling my support through flexibility and diversity in my teaching plans, assessment and evaluation practices. *My students need their imaginations to envision the possibilities in our relationship.*

I need Engagement

Effective teaching and learning require the emotional engagement of my students and me. Emotion is the mind's rudder. Connect knowledge to some human emotion and it becomes meaningful and memorable. *The work of imagination for a teacher enables us to see the ways and means by which this might be achieved.* In order to teach, I need "cognitive tools"—learning tools that engage my students' emotions and imaginations. I employ tools of oral language, tools of written language, and tools of philosophic and ironic understandings to connect my students' emotions and imaginations with the content of the curriculum. These tools forge pedagogical relationships based on wonder; they are long-lasting. My students are constantly engaging their imaginations in learning the content of the curriculum. I committed some educational blasphemy just now…did you notice? An important piece of the engagement piece is that it starts with me. I know, this isn't the currency in teacher talk—we must always start with the student. Well, I challenge that idea. Students know when their teachers are not engaged. If I want to create a learning context that maximizes my students' engagement—and learning—I must also be engaged in the subject matter. I need to find a source of emotional significance within the topic so I can create an imagination-focused context for my students. My imagination must be

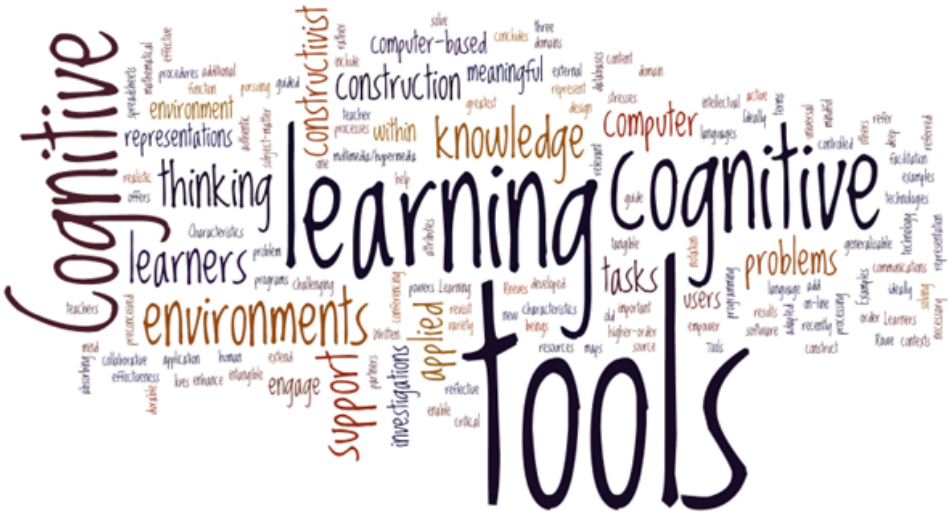
ignited. Whatever the topic—Quadrilateral equations in Math? Haiku poetry? Educational Change in Theory and Practice?* (*what I am currently teaching)–it is essential that I approach curriculum topics with affective alertness. I seek an emotional connection—what stirs my sense of wonder? In order to emotionally engage I need to have depth of knowledge in my subject matter—and a commitment to gaining this if need be.

I need Assessment

I cannot disconnect effective teaching from effective (caring, constructive, formative) assessment. *The work of imagination as a teacher enables me to think about the possibilities for assessment and the likely effects of my assessment practice.* Ongoing assessment of my students is part of my daily teaching practice. I need to know what where my students "are": what they need, what they want, and what they can handle in order to make my pedagogical decisions. More "formal" assessment (though no less important for teaching) comes in the form of my feedback on their work. I believe my students will learn most if my feedback is ongoing, constructively critical, positive, rich, and timely. It should also provide them space for *possibility. How does my assessment engage their imagination? How do I extend emotional connection through teaching into the assessment process?* Also, perhaps the hardest question for a teacher:

How do I value through assessment my learners' use of their imaginations?

I need to envision ways to create open assessment spaces for my students to shine. *Spaces of possibility*. But I don't just assess my students—I ask that they provide me with feedback as well. My teaching "plans" need to be flexible to suit the needs and interests of my students. So I plan with flexibility and maximum space for diversity in mind and then I ask for feedback. I need to be able to adapt my plans mid-stream and, always, take summative student feedback and revise entire courses as needed. I need their feedback to be an effective teacher. I need my imagination to help me sense, make sense and act upon these things in my teaching.



I need Curiosity

I believe love of learning stems from curiosity. *Curiosity is imagination knocking at the door*. It's the disposition we need as teachers. It's the disposition we want to see in our students. I believe the world is wonder-full. Our curricula are wonder-full, but the work of the educator is to encourage and help learners see and appreciate the wonder. This is the work for imagination for the teacher. Topics that may seem on the surface to be "ordinary" are in fact richer—and more interesting–than we will ever fully understand. And here's the contradiction: educators want to support a love of learning in their students, and yet, many don't demonstrate a love of learning themselves. They look at knowledge as mundane, topics as boring, and they often teach things to students "because it's important to know this". Every topic can be seen in a light that shows it as unique. Every topic glimmers with wonder. (Yes, even "paragraph writing" or "punctuation".) Curiosity brings joy to my teaching. It stimulates my interest and my imagination and enthuses my practice.

I need Hope

Education matters. It's the vehicle through which human beings not only learn to adapt but learn to thrive. Education both replicates "norms" so that people are able to function within their society, but it also encourages learners to think beyond the "norms," so they can participate in co-creating a better world. Imagination helps teachers and learners to continually make better versions of themselves and transform themselves. Effective and empathic teaching doesn't involve passive "hoping" for a better world; teaching is hope in action. Teaching learning: is striving for what is or might be possible. It is *imagination in action. That is the educational work of imagination.*

Whether reflecting on my love of arbutus trees and outdoor spaces, my personal or professional values, the imagination is a driving force in this work. Our imaginations connect us back and forward in time, situating our values and ideas in memory, and are also knocking on the door, inviting us to open up to future possibility.

Imagination is not an educational option. It is not something we can seek only to start a lesson or fill a seemingly endless Friday afternoon. Rather, imagination is, as Kieran Egan describes it, the great "workhorse" of all learning.

It is this deep commitment to growing imagination in all learning contexts that led me to create imaginED: Education That Inspires All Learners (http://www.educationthatinspires.ca), an educational blog that shares imagination-focused educational content from all over the world. Content is written by imaginative educators for anyone seeking to better understand the role of imagination in all learning. **The imagination is one of our greatest capacities as humans. We must nurture it and, as educators, we must create the open spaces in our teaching for students' own imaginations to flourish.**

Acknowledgement

This article was adapted from a post I wrote for the ImaginED blog a few years ago.

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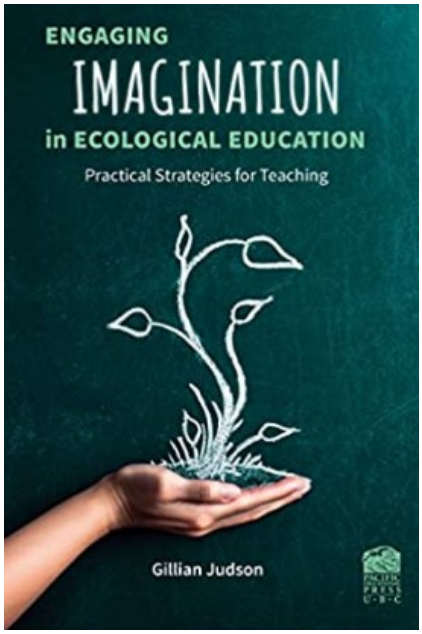
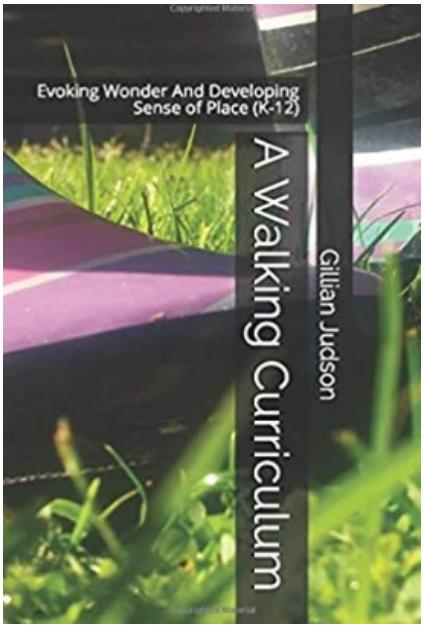




http://www.educationthatinspires.ca/

The website supports a community of practitioners. It contains numerous tools and other resources including a blog dedicated to imagination in education.

Encouraging Children to Use their Imaginations through Creative Writing

Jenny Willis

Jenny's career in education began as a languages teacher in inner London areas of social deprivation. This experience inspired her through middle and senior management of schools to teaching for the Open University and further research. Whilst working as an assistant registrar in HE, she completed a PhD in socio -linguistics. She held a fellowship in the Surrey Centre of Excellence for Teaching and Learning (SCEPTrE), researching professional and personal development. She is a founder member of Lifewide Education and was Executive Editor of Lifewide Magazine and Creative Academic Magazine from their inception until 2019. She continues to teach children and adults while pursuing her other interests, stigma related to mental illness and wellbeing.

My teaching of creative writing

For the last seven years, it has been my joy and privilege to be teaching KS2 and KS3 children English, including creative writing. In this article, I am using the idea of creative writing as a vehicle for encouraging and enabling learners to use and develop their imaginations, recognising that imagination extends well beyond acts of creativity.

The mere fact that my school and the parents whose children I teach place such value on creative writing (one form of creativity involving imagination) is, sadly, a reflection more of the assessment requirements of the competitive examinations for which they are entering their children, than an intrinsic valuing of creativity. To progress up the selective ladder, children need to demonstrate their capacity to imagine and create – in this instance, stories. However, the opportunity to teach creative writing in which imagination is so important also achieves the educational values that I believe in, and that go beyond the assessment function.

Why develop imagination in educational settings?

Regular readers of our companion publication, Creative Academic Magazine, may recall that, in 2018, issue 11[1] was dedicated to an exploration of imagination in education. The cover of this edition reminded us of the words of Mary Warnock: *'In education we have a duty to educate the imagination above all else.'*[2]

What did she mean? The magazine comprises many articles that expound on why imagination is important, and on the related theme, *What is imagination?* Those interested in knowing more about these issues, implicit in my belief in the desirability of developing imagination in learners, are referred to CAM#11A.[1]

Pendleton-Jullian[3] has already spoken eloquently about 'pragmatic imagination' earlier in this magazine, so there is no need for me to rehearse these themes. It is, however, pertinent to address the role of creative story writing (narrative) in the development of imagination, before I consider some illustrative examples from my own teaching practice. These relate to creative writing, but I should be clear that I do not wish to confine imagination to this field alone.

Since the 1980s, Kieran Egan has written extensively about imagination in primary education. His perception of imagination as entailing '*flexibility, energy and vividness of mind that imbues rational activity with life and richer meaning*'[4] is prescient of Pendleton-Jullian's 'cognitive spectrum', which spans perception, reasoning, speculation, experimental and free play[5]. Egan reminds us of the human tradition of story-telling, first oral, later written, which is central to out socialisation. It enables us to supersede rationality; our 'narrative mind' is imbued with associations, emotions and memories unique to the individual, that help us make sense of the world – and sometimes escape from reality.

Opponents of creative self-expression would point out that narratives can be used to teach us values and moral behaviour, which may be deemed abusive indoctrination. For the teacher, another dilemma is well-understood: in giving licence to imagine new possibilities, we risk going against established norms and traditions. This was a contentious issue in the 1960s and '70s, when curricular experiments, such as those at William Tyndale School[6], appeared to result in anarchy.

My own position should be clear; I share Egan's rationale for developing imagination in school children:

> *The development of the narrative capacities of the mind, its ready use of metaphor, of its integration of cognitive and affective, of its sense-making and meaning-making, and of its overarching imagination, is of educational importance because these capacities are so central to our capacity to make meaning out of experience[4].*

How, then, do I go about this task? The following are 3 exercises I have used within the last week with children in KS2, mixed age groups from Years 2 to 5. They are not offered as ideal models, but I hope they may spark some adaptations among readers. After describing them, I shall synthesise some significant commonalities.

Story telling and writing activities to inspire children's imaginations

Example 1 Imagining and inventing a new species

I have used this simple exercise many times. It requires no resources other than a board and imagination. I set the scene, depending on age, by asking what an archaeologist does, and writing the correct spelling on the board. I then tell the class that we are archaeologists who have discovered the remains of a hitherto unknown species. I ask individuals at random to give me the name of a bird, an insect and a mammal e.g. ostrich, bee, tiger. I write the names on the board and we try various combinations until we come up with a term that sounds appropriate for our new species e.g., in this instance, berichtig, gerbeost etc. This usually causes a lot of laughter as we play with possible permutations.

Next, we discuss what our species might look like, which part of the bee /ostrich/tiger goes where. Based on this, we can imagine where the creature might have lived, what it ate and so on – if its body is ostrich-sized, could it really have lived up a tree? I write up any words that they may need help with, such as excavate, habitat.

This has been stage 1, modelling and providing language support. We have co-created an example verbally and hopefully I have engaged the learners' interest. Next, it is over to them to create their individual new species. I give them the same guidance: choose 3 existing creatures; give it a name; write a paragraph about what it looks like, then where it lived and finally what it ate.

This was one exercise I used last week with a small group of mixed aged KS2 pupils, for some of whom English is a second language. Because of Covid-19, schooling is limited, so they are attending lessons with me three times a week. All are able children.

Stage 1 immediately sparked their interest, and our co-creation was a lively process. By the time we reached stage 2, they felt confident enough to take control and started wanting to alter the parameters: 'Can we have more than 3 creatures?' 'Do they have to be …?' 'Can we draw the new species?' I was happy to agree to their deviations and time flew by as they worked and chatted with each other about their creations.

Figure 1 shows one of the products of this exercise, the Mongiphantu. This was the work of a boy whose first language is Bulgarian. Although his text is simple, it is mostly accurate English. Unlike some of the others, he drew the image after writing about the creature, whilst other preferred to draw first and relate their writing directly to the image.

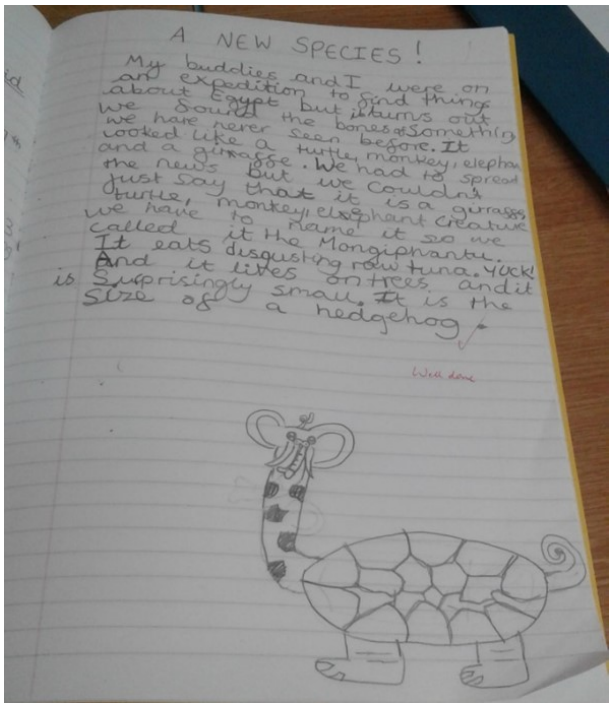
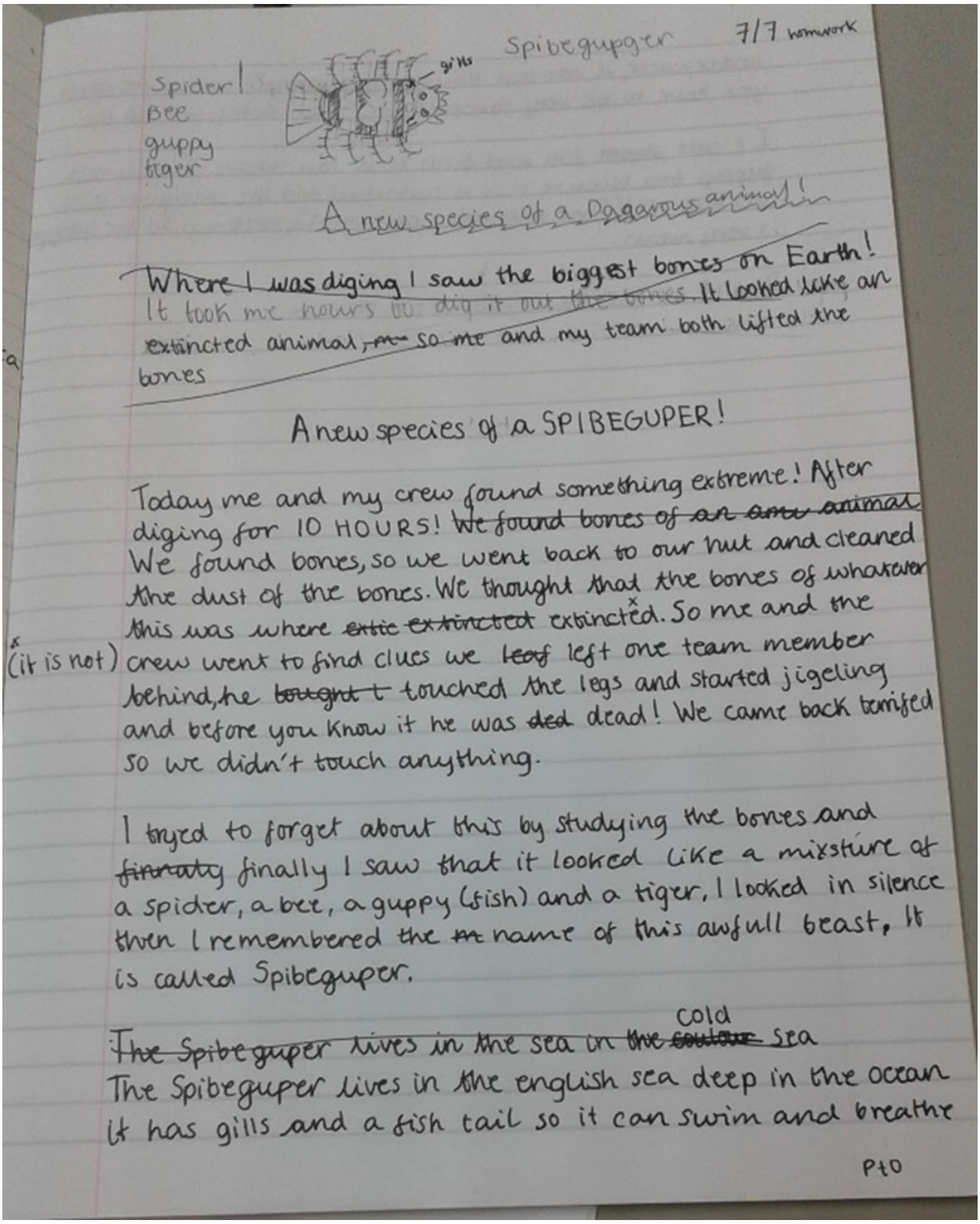


Figure 1 The Mongiphantu

Figure 2 is the work of a very able English girl, but she has been educated in an international school in the Far East until recently. As we can see, her spelling is very weak but her imagination is sharp. I include this example as it illustrates her creative process: she began with the drawing, started an account then deleted it and started again, this time to write a full narrative.

Together, we have two totally different responses to the task, but they both reveal imagination in creation of the new species. They draw on rationality and their perceptual experiences e.g. where do they live?, but also they involve emotions, speculation and experimentation, features of Pendleton-Jullian's pragmatic imagination.

Figure 2 The Spibeguper



Example 2 Magic dice stories

Another favourite with my groups is a commercially available game comprising 9 dice on each surface of which there is an image. I divide the dice between the children so that each has a turn at throwing one/some. Whichever image is shown on the top of the dice represents a word (a noun, e.g. witch). There are also a few magic powers, distinguished from the others by being in red. These are the ones that they love to find! I write the 9 words (nouns and magic powers) on the board for reference. Our task is to make up a story which includes all the words (some of which can make strange bed-fellows).

For the students they are playing a game through which they are encouraged to use and enjoy using their imaginations to create stories from the images on the dice they have thrown. They like to have hands-on involvement in which words must be used and don't seem to tire of the limited possibilities because in their mind the possibilities are not limited.

How we proceed from throwing the dice depends on whether it is the first time the group has used them, and on their abilities. The first time, I would engage them in a process of co-creation, verbally creating the story-line, then writing the story on the board as they tell me it. I might give them a paragraph framework before we start, to ensure that the story is properly structured. For beginners and younger children, I would get them to copy from the board, ensuring that all punctuation and spelling is correct. This can also be made into a competition: who makes the least errors. I underline each of the 9 key words the first time they are used to ensure that we don't miss any.

There are endless variations to how this material can be used: I have a weak speller who lacks confidence, and likes to work with his (younger) sister. For others, I might make it a competition. I set other criteria e.g. you must include a colon, a metaphor, direct speech. The children all know the criteria and each assesses their peers' stories. This is done by the writer (normally) reading it aloud then hiding their eyes whilst each of the class holds up fingers to show the score they are awarding it. Often, one of the group will ask to keep score. I am fortunate to teach small groups and they all know each other so are generally comfortable in sharing their stories. Once more, it is a game but beneath the fun, they are guided towards creative writing, and are able, consciously or unconsciously, to learn the standard of work that they need to achieve.

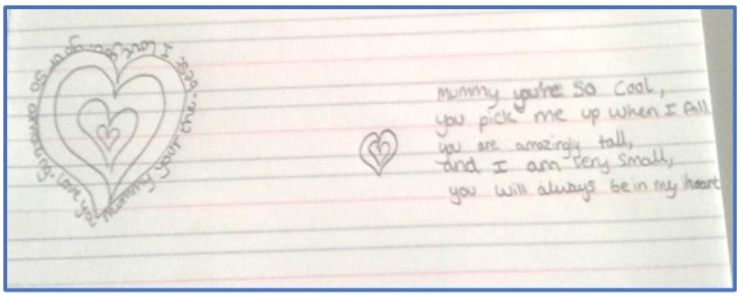


Figure 3 A Mother's Day poem

Example 3 Shape poems

The third example of a task I have used this week involves creative writing of a visual as well and linguistic nature: shape poems. Like the previous two, this exercise requires very little resources: I have a worksheet that I designed giving advice on what a shape poem is, how it can be created, and showing a variety of real examples. I use this to introduce the task, and encourage discussion around the themes and formats they might use. On this occasion, I showed the group how another of my pupils had taken drawn a football and filled it with a poem she created about how it feels to play a match. My alternative had been to use the words associated with football to create a football shape. Figure 3 is the work of a younger girl, who combined the poem and image some years ago to send her mother greetings on Mother's Day.

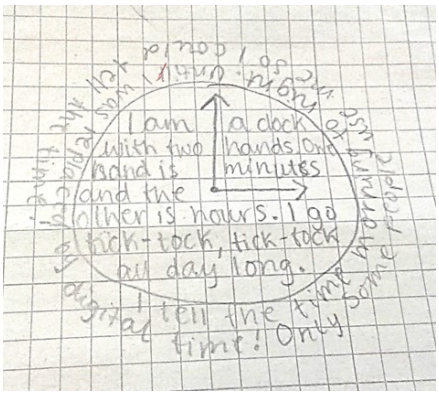


Figure 4 Time poem

Stage 2 is to help each child to choose a theme. Some do this easily, others need help, so I have to tease out what their interests are. Their task is then to create a poem, drawing on sense associations e.g. taste, smell.

This week's group included an able, Bulgarian girl who is clever but unimaginative. She simply could not think of a theme, but eventually settled on the idea of time, suggested by her friend. Her response is shown in Figure 4. It's is a deceptively basic piece: when you read the text she has written around the shape, she has used her imagination and logic to create a humorous piece. It is typically neat and linguistically accurate.

Another member of the group is a twin, who is lacking self-confidence having always been in the shadow of her more extrovert sister (who is also in the group). I had to work hard with her to explore what she might write about. Eventually, she said she likes cooking so we settled on a cake, this being a relatively easy shape to draw. She began to take control by rejecting the cupcake shape I had modelled, replacing it with her own full cake. Her creation is attached as Figure 5 . It is a simple design, and there are spelling mistakes, but I know how much thought and effort she put into expressing her sensual associations. What came next, though, was quite unexpected: she asked if she could make another poem! This indicator of engagement and growing confidence was great, and within minutes she had produced the flower poem shown in Figure 6.

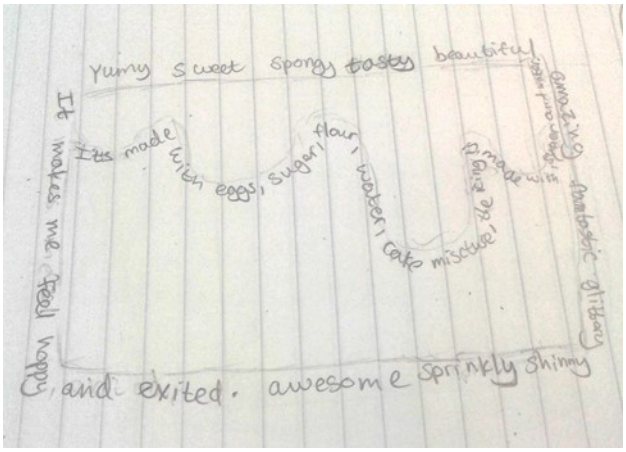


Figure 5 A cake poem

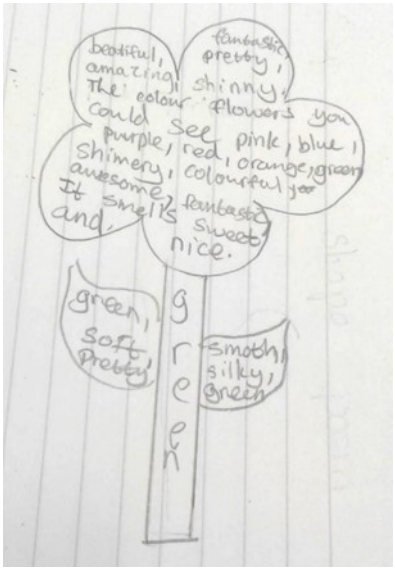
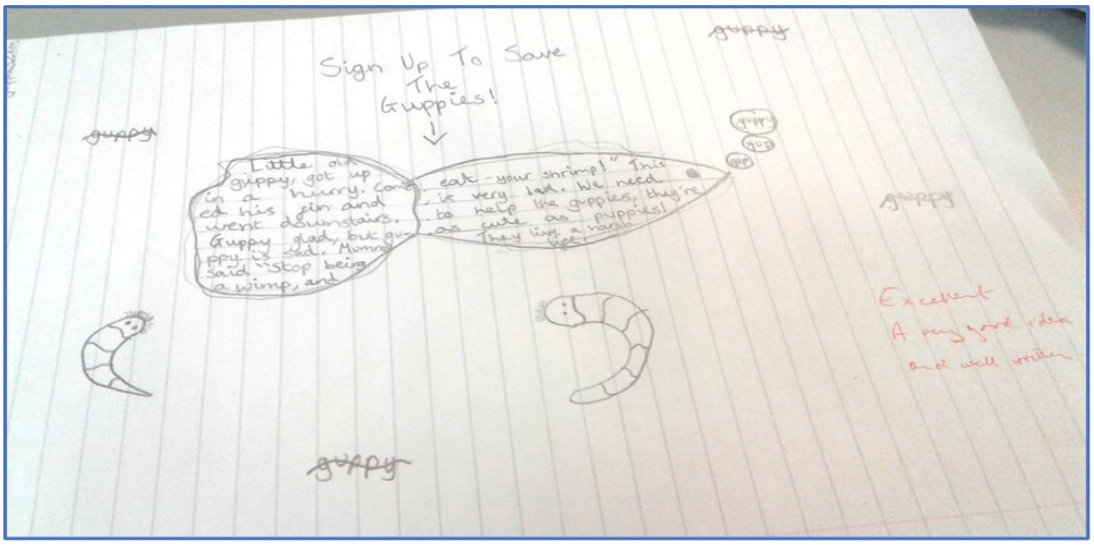


Figure 6 A flower poem

I include these examples of how the children created new artefacts from their imaginations not because they are technically good drawings or outstanding writing; rather, they remind us of the relativity of mini-c achievement. For me, and I am sure the child concerned, they mark an important step forward, and, I hope, scaffold future achievements requiring their creativity.

A final example from the group's work shows how one Year 5 child really embraced the idea and made it completely his own. He is a bilingual boy, of all-round high intelligence. He noticed a poster of various sea creatures displayed in the classroom, and decided that his poem would be about one of them, guppies. He was attracted by their shape. He worked excitedly, asking what we thought guppies might eat, but otherwise not drawing my attention until he had finished. He then proudly displayed his work (Figure 7) and explained it to me: he had created a poem for a campaign to save the guppy. His shape poem really was a poem, inside a guppy frame. After I had checked his spellings, he went back to the picture and made it into a poster, including dead guppies (indicated by the strike lines) and the shrimps he had referenced in the poem.

Figure 7, A guppy poem

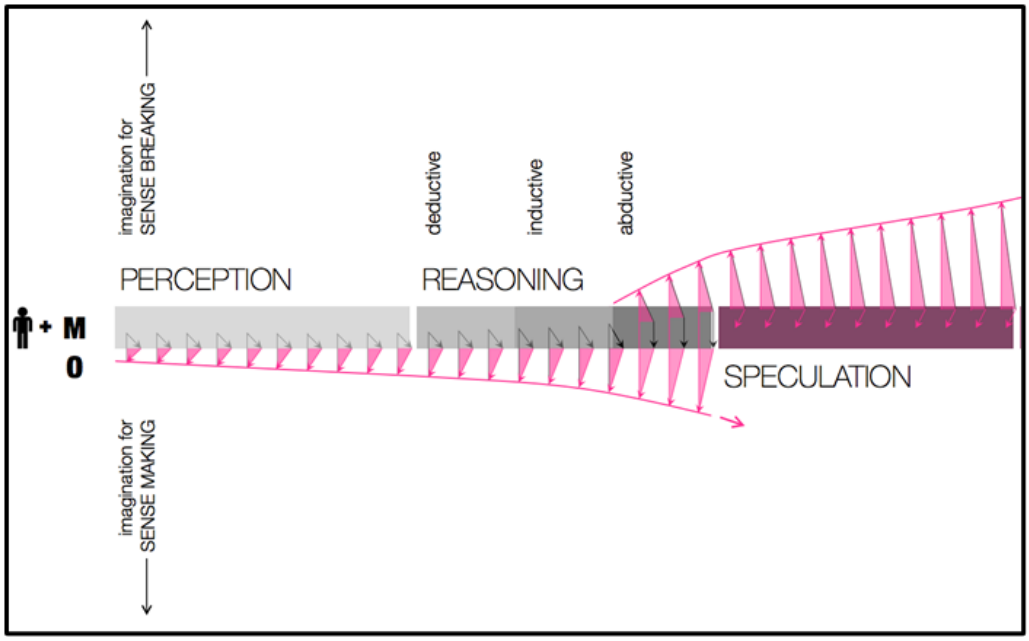


In this case, creativity was qualitatively greater than that of his peers. He had written a poem, contextualised his creation in a political campaign, and used humour in both the poem and his drawing (the dead guppies warning of the danger of extinction). He had used reason, speculation, experimentation and free play, the full spectrum of Pendleton-Jullian's pragmatic imagination[3].

So what conclusions might I draw from my experience of encouraging this small group of children to use their imaginations to engage their own creativity and produce new, useful and aesthetically pleasing products?

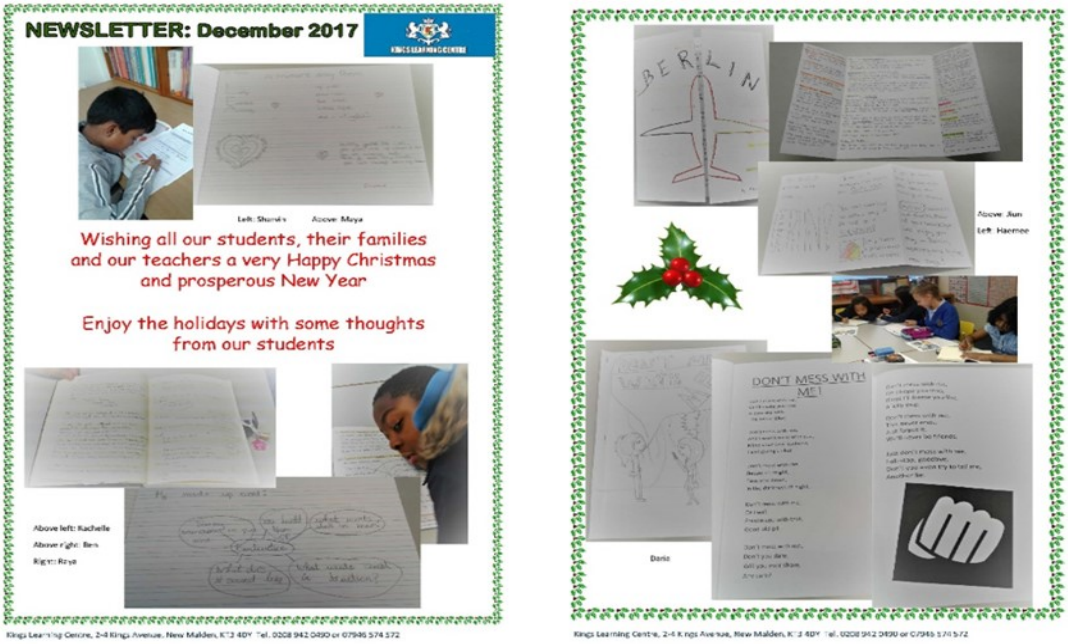
1. My first observation is that by creating an environment and culture in which imagination is valued the children readily embraced the challenges that required them to imagine.
2. Secondly, we do not require rich resources in order to stimulate imagination and engage creativity, the richest arguably being the initial idea. The first example in particular illustrates this.
3. As a teacher, I am constantly thinking about what and how to motivate my groups so that my students enjoy the process of learning. I have discovered that involving them in activities that require their imagination is an effective way to motivate them in work that brings them joy.
4. Knowing the individuals is essential to what and how we teach. I appreciate that I am in a privileged position, teaching small groups of children who want to learn, and not being constrained by the national curriculum, so this is not universally possible.
5. The stimuli that I find most successful for engaging children's imaginations are visual: a funny picture I see in a newspaper, a brief video of something I have seen whilst on holiday e.g. elephants bathing in Sri Lanka.
6. I hope that readers will agree that the three examples involve fun; games and humour can also result in serious learning.
7. Interaction is common to all of my activities. This is again made more possible by the number in each group. I use it for various purposes, including question and answer and co-creation.
8. The sharing of imaginations leads to co-creation and the invention of something like a story that is owned by all of us: another valuable lesson for children to learn.
9. The children know what assessment criteria I will apply. Self- and peer-assessment are valuable, the latter being another game, where the children have authority but are also being sensitised to different levels of achievement. To be consistent and authentic I need to make sure that imagination is valued in my criteria.
10. Which leads to the value of such creative exercises in supporting different outcomes. I know what each child is capable of so can differentiate my expectations.
11. It is important to value individual work, without devaluing expectations. Teachers do this routinely by displaying their classes' work. Because of the context of my teaching, I have been able to do so by producing periodical newsletters, such as that shown below (Figure 8). It is worth expanding this image and reading the examples included. I also tell them why I am taking photos of their work, after they have given me their consent, so this week's group know they will be included in my article for Lifewide Magazine.
12. Finally, in reflecting through this narrative I have discovered the way in which the theoretical model of pragmatic imagination, proposed by Ann Pendelton-Jullian,[3] (Figure 8) might be used to interpret how my students are putting their imaginations to work.

Figure 8 The way imagination works with perception and reasoning[3]



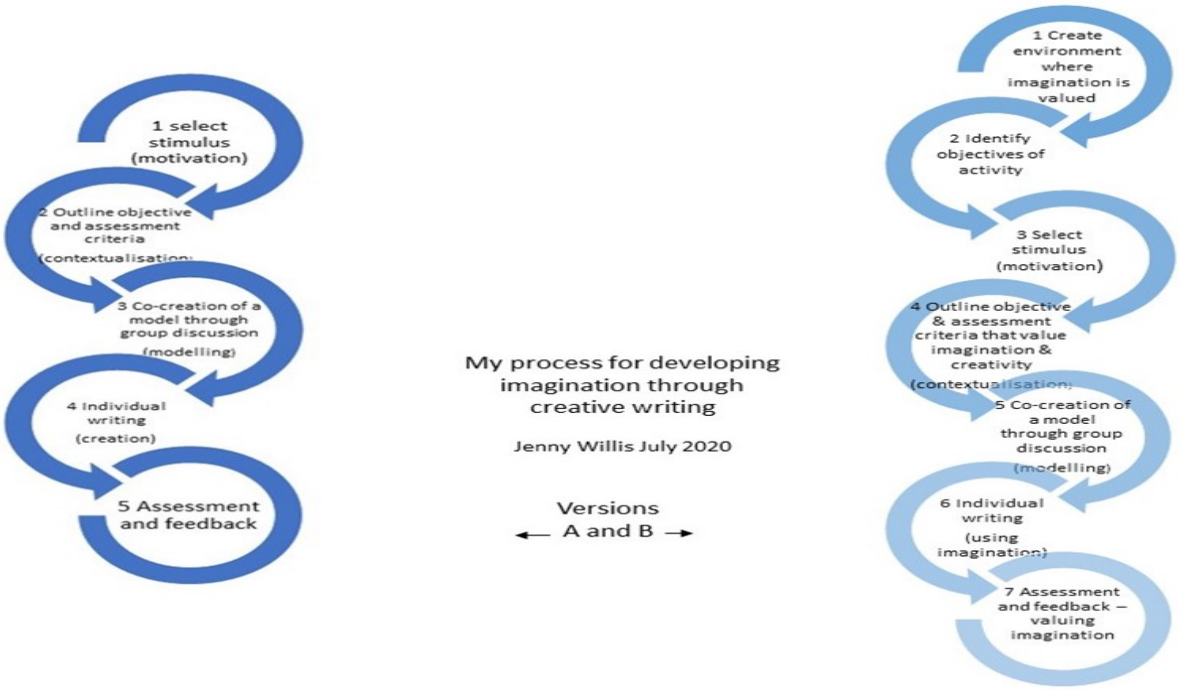
It is not enough for a teacher to help and enable their learners to use their imaginations: they must also show they value the results. One of the ways I try to show my appreciation is through a newsletter I produce for the students and their parents.

Figure 9 Valuing and celebrating individual and collective imaginations at work through a newsletter



In the #creativeHE Facebook discussion of July 2020, we were exploring systems and processes. I posited an analysis which involved 5 stages in my attempt to develop imagination and creative writing skills (Figure 10 left). On reflection, there should perhaps be 2 steps before stage 1: creating an environment where imagination is valued and the identification of learning objectives that explicitly includes the use of imagination, so I have revised this (Figure 10 right). This process is, of course, not stand alone, but rather part of an iterative spiral where each successive activity builds on that of its predecessor (s). It is this that will take creativity from mini through to more advanced levels.

Figure 10 The stages I use in encouraging, supporting and valuing the imaginations of my students. The revised set of stages is shown on the right.



Concluding comments

I began this article by asking what creativity is, why we should pursue it and whether it is 'teachable'. My three examples of activities I have used within the last week offer answers to these questions. They testify to the individuality of creativity; they focus on mini-c creativity which can be scaffolded for progression to higher levels, where achievement goes beyond that of personal satisfaction; and they demonstrate that by motivating, creating a secure environment and modelling, we can certainly draw out creative expression from our learners. They are real examples of Pendleton-Jullian's pragmatic imagination in action.[3]

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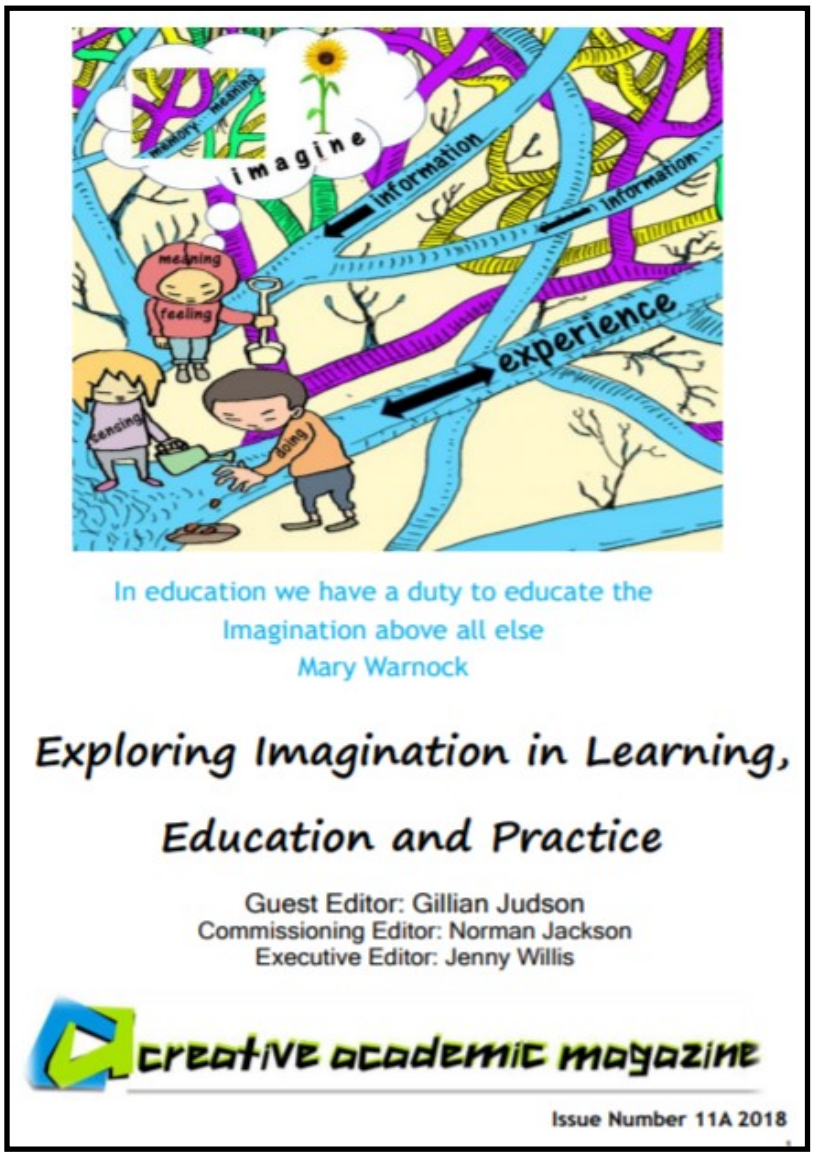
6 William Tyndale School. See, e.g. https://en.wikipedia.org/wiki/William_Tyndale_affair

Free to download at: https://www.creativeacademic.uk/magazine.html



Imagination at Work in the Higher Education Classroom
Joy Whitton

Joy works in the Portfolio of the Deputy Vice-Chancellor (Education), at Monash University, Melbourne, Australia. Her research is focused on the subject of imagination and creative practices in non-art-based disciplines/professions. Her book, *Fostering Imagination in Higher Education*, is based on her doctoral research.

Tackling the problem with imagination in higher education

In 2016 I wrote a book (*Fostering Imagination in Higher Education*[1]) which argues that the role of imagination in teaching how the knowledge base can be put to work creatively is not well understood by HE educators. It investigated how university teachers in non arts-based disciplines and professions foster the creativity of their students, with a particular focus on imagination as a fundamental aspect of creativity in higher education. The research investigation used ethnography[2], a qualitative methodology with its roots in anthropology and sociology that involves fieldwork observations and the collection and analysis of artefacts pertaining in that context. My interpretation of observations on how teachers fostered imagination drew on Paul Ricoeur's theory of imagination, and more recent theory on the 'extended mind'. My view of learning reflects a concern with in-person changes, which modify how we interpret our surroundings, and, in turn, change them by our actions. It tries to encompass how we advance knowledge and how we go about learning new practices, not only how we acquire existing knowledge – which is a central concern to what a university education means.

I adopt the perspective that imagination is one aspect of creativity, because I think it's possible to imagine without what one imagines leading to the creation of something. The argument in my book uses the term creativity as the overarching term. An Organisation for Economic Co-operation and Development (OECD) Working paper adopted a Five Dispositions Model of Creativity [3 p16-17], which included five dispositions or aspects:

- curiosity or inquisitiveness, challenging assumptions;
- persistence; grit;
- discipline (by which is meant devoting time to developing expertise or mastery in domain relevant skills;
- collaboration including the giving and receiving of feedback;
- imagination, which refers to making connections, playing with possibilities and using intuition

Each of these dispositions or aspects reflect key themes in the psychological and educational literature on creativity [4-6].

Taking these *five* dispositions further, a fruitful metaphor to understand what imagination is, and its role in creativity is the thumb's function in the hand. If the creativity 'hand' can be composed of five main aspects or 'fingers', imagination could be considered the thumb, the opposable digit with the power to unlock the potential of the others. In fact, this analogy works from a number of viewpoints. It carries with it the importance of wholes – of the importance of the thumb for the facile functioning of a hand. In an analogous way, imagination is crucial to 'grasping' an insightful new connection, some newly perceived relationship or similarity, some new idea or purpose. The connections referred to are not random or pastiches. These new connections made possible by the imagination offer the foresight to see beyond 'what is' to 'what *could be'*. But imagination needs to work in tandem with a seeking curious impulse, with persistence, grit, confidence to take risks, and to be informed by a deep familiarity with, and skill in, one or more fields: the other four elements that make up the full hand of creativity. The hand metaphor also nicely carries connotations of my contention that imagination is opportunistic in its use of available *tools* in the environment – whether language (as Paul Ricoeur contends – see below), or things, technologies, social networks or the body itself – to structure this grasping. In this way it plays a fundamental role in cognition and learning. The post-Cartesian framework of the embodied and 'extended mind' thesis [7,9] contends that the body, language, and the opportunistic use of things in the

environment all play a role in cognition itself. As well, a creative disposition implies a proclivity to use these tools, a shift in priorities, not just competence or possession of the skill[10].

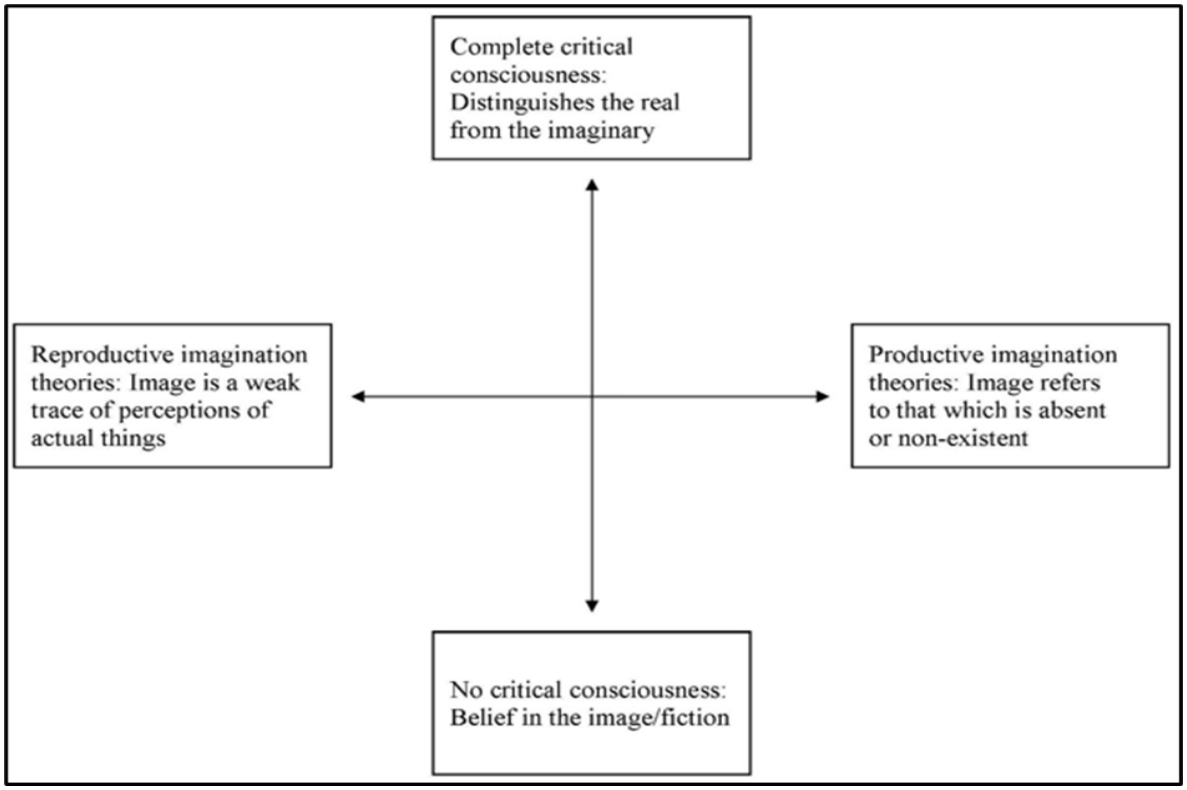
Theory of imagination

I draw on the philosophical writings of Paul Ricoeur, whose conception of imagination draws a distinction between 'reproductive' imagination, which relies on memory and mimesis, and 'productive' imagination, which is generative. Ricoeur asserts there are two main types of 'reproductive' imagination: the first refers to the way we bring common objects or experiences to the 'mind's eye' in the form of an image (e.g., yesterday's swim in rolling high surf). The second refers to material representations whose function is to 'take the place of' the things they represent (e.g., photographs, portraits, drawings, diagrams, and maps). He analyses and criticises the focus on the 'image' in western philosophy of imagination, arguing that at best the image referred to in reproductive imagination is derivative of reality; at worst it is a deviation from reality [11].

Ricoeur claims that philosophers have focused on 'reproductive' imagination and have given short shrift to what he, after Immanuel Kant, calls 'productive' conceptions of imagination [12 p. 169–71]. Productive imagination refers to images of non-existent things (as opposed to absent things). Again, there are two types of productive imagination: images, such as dreams; inventions, like novels or fables; and mythical creatures, like centaurs, which involve the projection of things that have never existed in reality (p. 170). However, the imaginer is fully aware that such things do not actually exist. A second type of productive imagination is the category of illusions or illusory beliefs, for example a hallucination of water in the desert, non-existent to an external observer but believed in by the subject. This *distinction in awareness* made in the third and fourth types of the fictiveness of imaginative products is an important one, as their conflation generates unwarranted confusion.

Ricoeur maintains many philosophical theories of the imagination, as well as common sense notions and usages of the word, tend to focus on one or other of these usages and therefore seem like rival theories, when in fact they consider different aspects of imagination. He maps understandings of positions taken up by theories of the imagination in the space formed by two axes, one showing the degree of reproductive or productive imagination implied; and the other showing the human subject's critical consciousness of the difference between the imagined and the real (Figure 1).

Figure 1 Ricoeur's two axes of received philosophical theories of imagination: degree of critical consciousness and productive/ reproductive imagination[12]

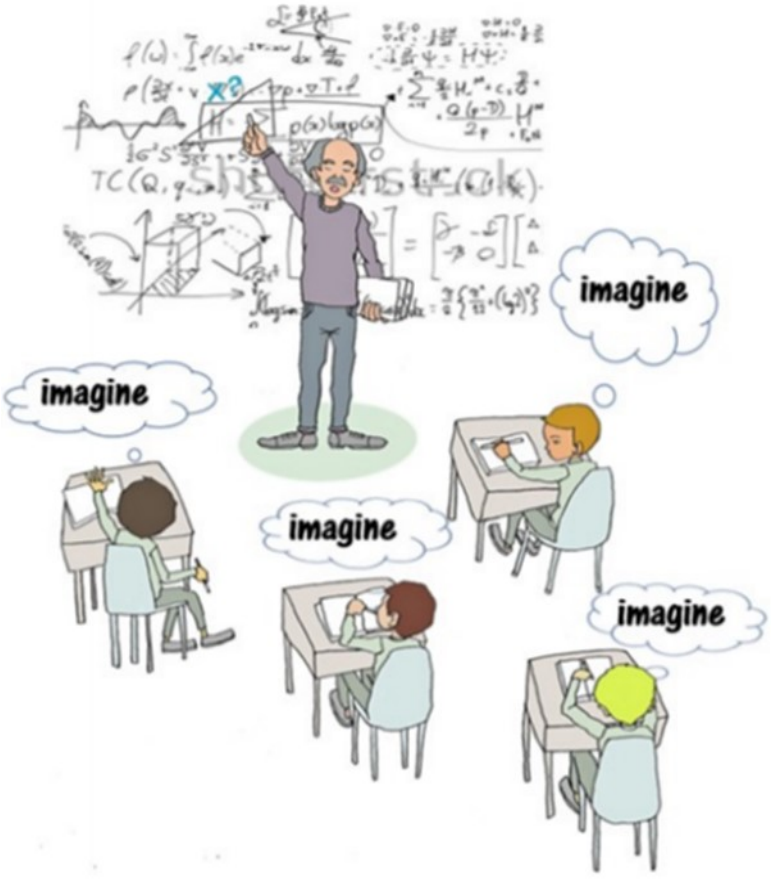


Case study: Fourth Year Quantum Physics

Applying these theories to the interpretation of teaching in a non-arts based discipline

As discussed above, my research sought to illuminate what teaching in non arts-based disciplines looked like when it encourages imagination while embedding its teaching alongside important disciplinary ways of thinking, skills and concepts. I will take a short illustration from one case study from my book.

In observing a fourth year unit in quantum physics, I was interested in what appeared to be foundational to how each class proceeded. The educator's teaching regularly combined diagrams, mathematical notation and verbal language, the interactive coupling of each mode, mediating, or synthesisizing, *constituting*, the cognitive processing involved in their understanding. Some classes might begin with maths, and then proceed to diagrams and then discussion or games would follow in which they would try to make sense of what these representations meant for their understanding of the concept of focus. They would try to put an image to an emerging meaning; the depicted diagram would then promote the drawing of some other form of representation such as another perspective, or slice of the first one. The pictures would then serve as a basis for making calculations of what it corresponded to, upon which further mathematical reasoning or further imagining could operate. It must be remembered that they were trying to imagine something they had never seen, that cannot be seen, that is consistent in every detail with what has been observed and measured in experiments, or which is represented by their calculations. The role that these multiple descriptions (linguistic, mathematical and diagrammatic) played was to recast their understanding, extending it to concepts beyond their experience.



This process of combining is analogous to Ricoeur's contention that narrative, like metaphor, is a linguistic cultural for of technology that combines heterogeneous elements of a plot into a semantically innovative new whole - that is a simple succession of events - in the sense we mean when we say we 'follow the story' by making the appropriate connections. It shapes them into a meaningful, organic whole and is therefore a form of productive imagination.

I am reminded of Polanyi's work on tacit knowing[13]. I would go as far as to say Simon's teaching method is encouraging a complex, tool-propelled form of intuition akin to the example Polanyi explores, of a blind person navigating their way using a walking stick. Polanyi explains how when we project our minds into a walking stick to navigate a pitch dark corridor we seem to extend our perceptual awareness beyond the boundaries of our body right to the end of the stick in order to orient ourselves in space. Only in this instance the tools are mathematics, diagrams and language in combination with each other. Together they augment the understanding our minds are capable of, when used in the service of understanding a quantum concept. In my view, Polanyi's explorations are a precursor to the concept of the 'extended mind' developed by Dennett and Clark[14, 7], which builds on work in robotics in which external objects, including diverse tools, symbols and artefacts (e.g., language, lists (pattern arrangements), slide rules, or iphones) are tools co-opted by us in order to perform cognitive tasks. We make them 'our own' through practised use. In Clark's view, the interactive 'coupling' between the objects and the mind *is* the cognitive processing [15]. The thinking weaves in, and through, the external objects or 'tools'.

> *Simple external props enable us to think better and hence to create more complex props and practices, which in turn 'turbocharge' our thoughts a little more, which leads to the development of even better props*.[7 p. 62]

What Simon is encouraging the students to learn is how to blend pictorial, verbal and mathematical reasoning tools functioning as 'proximate terms' (in Polanyi's language), by projecting their imagination and their reasoning through these tools into the situation they are trying to understand. In this way, they composed their new knowledge, which is the role of all expressions of the productive imagination in Ricoeur's terms. This is a good illustration of how higher education teachers engage learners' 'pragmatic imaginations' in the classroom.[16]

At another time, students played with bodily movement (reproductive imagination) to draw an analogy, and to model, oscillations and disturbance in three forms of light: laser light, candlelight and light from a distant quasar. The endeavour was in order to understand the notion of incoherence. The case study of this honours quantum physics class raised interesting issues about Ricoeur's theory of imagination. Among them was the relationship between reproductive and productive imagination. Pedagogy in this physics class pointed to what appeared to be a contingent and step-wise relationship between reproductive and productive imagination − something which Ricoeur himself does not expand on, although he does speak about memory's role in anticipation or rehearsal and its interaction. Memories rest upon people's embodied experience of the world. Embodied analogies and other metaphors were used by the teacher and students to model systems upon which further forms of reasoning, such as mathematical, diagrammatic and linguistic reasoning could operate (as in using body rhythms to 'model' correlation).

Finally, this ethnographic case displayed the active role of imagination in the provisional nature of knowledge. On multiple occasions in multiple ways – through the attitudes to error, to the admonition to question assumptions and approach problems in ways that were meaningful to the individual students, to embodying the hypothetical representation of the nature of correlation – concepts and theories were treated as working ideas that guided and enabled inquiry but which could be reconstructed or falsified in the future[17]. This is captured in Ricoeur's theory by the productive imagination, including the human subject's critical consciousness of the difference between the imagined and the real. Productive imagination entails an awareness of the fictiveness or constructedness of the creation. For learners, this means an openness to reconsider how knowledge may arise in the future. This suggests that imagination's importance for opening up possibilities has an important role to play in the renewal of knowledge and for inquiry, and learning, to be never-ending.

Acknowledgement
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Putting Imagination at the Heart of Learning for Life

Doug Cole & Andy Penaluna

Doug is Deputy Director of Employability at Nottingham Trent University, prior to this he spent three years with the Higher Education Academy focused on developing strategic approaches to employability and student success. In 2012 Doug developed a national framework for embedding employability in the curriculum to support institutions in developing graduates with the qualities and capabilities vital for success, not only in securing employment, but more broadly in life too. In 2013 Doug co-authored the Higher Education Academy publication; Defining & developing your approach to employability: A framework for higher education institutions. He has been focused on seeking to apply and embed these research-based principles in practice and at scale ever since. In 2020 Doug joined Lifewide Education as Creative Director and Assistant Editor of the Magazine.

An expert at the United Nations in Geneva, Andy helped the European Commission to develop 'EntreComp' and educator training for 8 countries in South East Europe, where he led the world's first compulsory school curriculum for innovation and entrepreneurship. Andy writes for OECD on innovation and chairs QAA's EntEd group, and is currently working on new school curriculum initiatives in Wales where 'creative enterprising contributors to society' is one of four new 'purposes' of a school education.

Learning for a world in continuous formation

The world is constantly changing, the idea of a white water world conveys its turbulent and unpredictable nature[1]. The pandemic brings a whole new dimension to this and what is abundantly clear is we have to continually evolve, change, adapt and flex to ensure that we ultimately flourish in life rather than simply existing. According to the World Economic Forum, cross functional skills and personal qualities that will be in demand across all professions will be Leadership, Communication, Negotiation, Creativity and Problem-Solving. Emerging jobs have a common theme of media content production and agile development, plus people skills in the AI environment[2].

Both the employability and enterprise agendas have existed within Higher Education for some time, and in many ways might be considered as having amplified the need to be mindful of the future, most commonly articulated as anchored *to* **what we can do** i.e. in terms of a job or starting our own business. On the flip side of this and less commonly cited is a focus on **who we are** as people and what we might become. Fugate et al.[3] highlight the importance of looking at *career identity* as part of their *Psycho Social* model of employability, perhaps an equally important lens to be adopting here is one that views *personal identity* more holistically, with what we ultimately chose to do for employment and paid work, being one particular (but important) context in our lives, rather than defining our wider sense of being and purpose.

For well over a decade authors have sought to define both employability and enterprise, harnessing their own imaginations to articulate a particular stance, often through a specific definition, model or framework. At this level imagination plays a crucial role in considering multiple sources and assimilating this information in order to arrive at a particular view of these complex and inter-connected concepts.

For those of us working in the field of employability and enterprise, our first challenge is always around engagement. How do we best articulate and explain these complex concepts to others? Imagination is crucial here, do we use definitions, if so, which one? Or perhaps a particular framework or model, if so, again which one? How do we then contextualise these to best connect with a particular stakeholder, so that they then truly understand what's important here and how they might in turn address this most effectively in their own practice or life?

The omission of imagination

Everything that is made had first to be imagined. – buildings, transportation systems, the technologies we use and our culture including our language. Yet imagination is not explicitly mentioned in any model of employability to date [3-7]. However, areas such as reflective practice, planning, emotional intelligence, self-awareness and self-regulation, all of which involve imagination, are explicitly stated as being crucial features in this body of work. In this respect, the seeds of imagination are there, with some reference at least for the need to be able to reflect, looking back and thinking forwards, hinting at the value of imagination. However perhaps much more is needed and could be done?

In entrepreneurial learning, the links may be a little more explicit. For example, the UK's Quality Assurance Agency for Higher Education definition of enterprise precedes entrepreneurship, and specifically requires the generation of ideas and the recognition of opportunities, combining "creativity, originality, initiative, idea generation, design thinking, adaptability and reflexivity with problem identification, problem solving, innovation, expression, communication and practical action"[8 p7]. Moreover, the European Commission's Joint Research Centre developed the EntreComp Framework[9] (Figure 1), which has spotting opportunities, creativity, visioning and coping with ambiguity as four of its 15 key areas of competency. Imagine these being effective without an imagination!

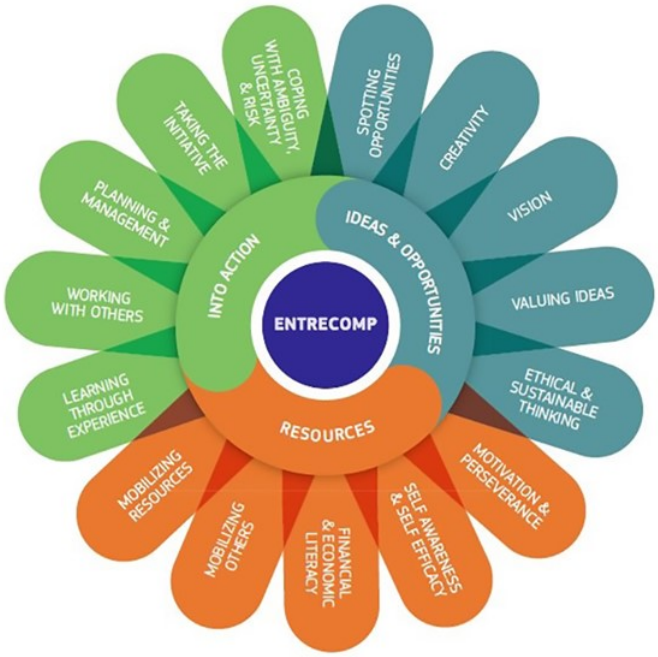


Figure 1 The EntreComp Framework

What if imagination was valued as an essential feature of employability to be developed in HE?

Let us step back here to go forward, and consider underlying principles and understandings. For example, where does a new venture, sustainability or business enhancement come from? Typically, it is a mixture of prior knowledge and experience, often set within a discipline and profession. These are either reconnected in new and different ways, or encompass new understandings that shift the current state. Initially this often takes place in the mind of one individual, who is open minded to look beyond what might appear to be obvious.

Think about the metaphor of NASA spending millions to improve the biro pen for weightlessness compared to the Russian concern over how to ensure pencil sharpening took place in a sealed bag… they both wanted to write in a gravity free environment, but connected and gave precedent to prior knowledge in different ways.

Sticking to the science for a moment, creative imagination can be taken back to a single new connection between neurones in the brain that haven't spoken to each other before [10]. The art of the possible relies on the curiosity to look beyond immediate boundaries, and the ability to connect and reconnect thoughts, experiences and in many cases, people. No-one will be surprised to read that these new thoughts, just like new friendships, are fragile, and unless repeated or argued out, are soon lost, as more pragmatic thoughts take precedence.

From this science we now know that the prepared mind is an important consideration. Unless specially trained to deal with it, stress combined with clear goals leads to what is termed 'premature articulation', because you've come up with an idea before you really thought about the potential alternatives, or a clear 'obvious' answer took priority over a 'maybe' that was never tested.

Imaginative people simply know that doesn't work, and that their new ideas can arrive unexpectedly, and often when their conscious mind is working on something mundane. Simply put, emotion and the prepared mind go hand in hand. Emotion of course, also relates to well-being, and recent scientific neurological research[11] demonstrates that making new connections in the mind had a positive impact on emotion – it is a virtuous cycle. Being imaginative makes you feel good, and being emotionally stable and relaxed helps you to imagine and reimagine new ideas, all of which is clearly of value to both employability and enterprise.

Where might we have gone wrong in education we wonder, with aspirations to create environments, conducive to developing these states, when education tests the learning through examinations and tests perhaps? Let's break that down using the notions of hindsight, insight and foresight. Clearly hindsight works, because we can look to past successes and determine the 'correct' answer. But what of insight, which is where imagination is required to spot the things that others may have missed? Where is that tested, nurtured and supported in a progressive way? Those with foresight imagine many futures, and use their predictions to help to shape their learning

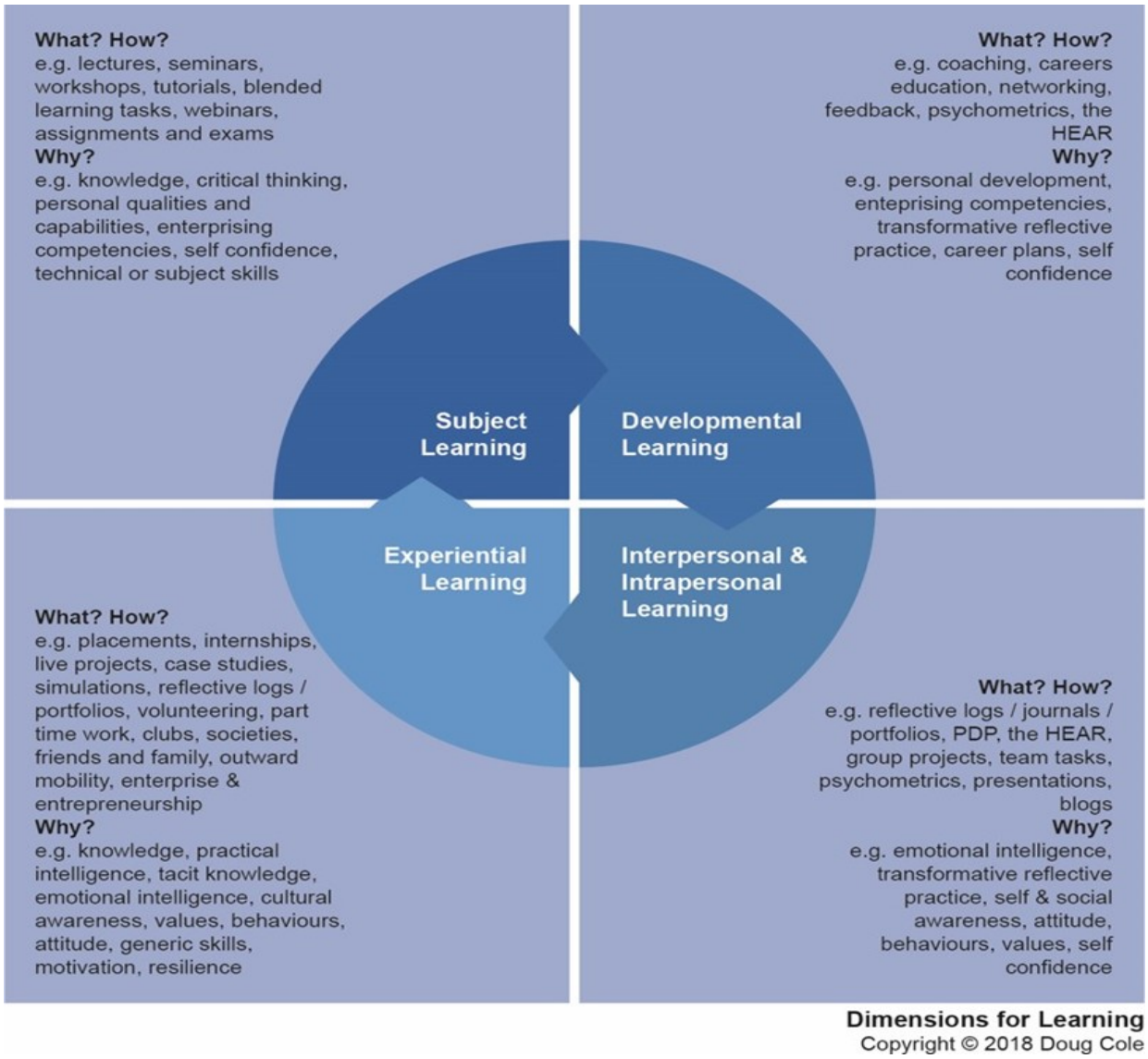
journey. They don't play to where the ball is, they play to where the ball might be! So, if you get tense, how can you be imaginative? Moreover, if you can't imagine potential futures, how easily can you adapt when things are in flux and constantly changing?

All of these things are so important to the areas of enterprise and employability and how we might best support students and learners to prepare for life in a complex world [12]. Having a point of reference, an underpinning rationale to create and highlight lifewide learning environments presents a real opportunity for a shift in our focus in education. Frameworks and models are a good starting point, to stimulate discussion, ask questions and poke the imagination of all stakeholders to consider the possible future, what it might be and not just adopting a more passive stance and accepting what it is.

We are not suggesting a prescriptive, one-size-fits all approach here that leaves little room for imagination, but with some kind of guiding structure or scaffolding, and ensuring we ask the right questions, we might just elevate our work in both employability and enterprise and the value of an individual's imagination truly sits at the heart of this opportunity.

Ideally a principle based approach to nurturing imagination might be best suited in Higher Education at least. In the *Dimensions for Learning* taxonomy developed by Cole[7] he highlights four broader contextual areas of learning that are all equally important to support students' and learners' future success. This could potentially be applied and have value from both an employability and an enterprise context. This research informed taxonomy might be used as a tool to help translate research to practice in a flexible way, supporting the development of imagination at a number of levels.

Figure 2 Dimensions for Learning taxonomy[7]. All these dimensions contain abundant spaces for the use and development of imagination



Making imagination a concern of higher education employability

How might we begin to incorporate a focus on imagination much more? Firstly, with academics, course teams, students, entrepreneurs and employers working together and including imagination as a key feature when defining the personal qualities and capabilities that are important to success from the outset in their planning. Secondly, course teams and institutions need to paint a picture to show why imagination matters: course designs need to be mindful of how students are using and developing their imaginations. The EntreComp framework[9] is a good example of the kind of literature worth reflecting on as part of these discussions here, seeking to identify which specific learning outcomes are potentially most important across each of the four dimensions in Figure 2. It would also be useful for learners to develop their own understandings of how they are using their own imaginations in their academic work and in their wider life.

Thirdly, all students themselves must use their own imagination to contextualise and interpret what this picture means to them in their own lives and how this aligns with their own dreams and aspirations. Ultimately this has to be the yardstick for success, what the individual determines is right for their lives and futures and not a government and media imposed metric such as the former Destination of Leavers in Higher Education data (DLHE), now Graduate Outcomes or the Longitudinal Education Outcomes data (LEO), which presents how much money graduates are earning several years after graduating. With these blunt metrics deemed to be measures of success for those working in Higher Education and the worlds of employability and enterprise, a radical shift is needed in both government level thinking, the media and the resulting discourse which as a result directly influences Higher Education strategy and practice.

The value of imagination (or perhaps the lack of it) is signalled here again at the highest possible levels, without which the potential to truly be innovative and flourish will sadly be stifled and as a result, the workforce of the future will be seen lacking and national ambitions simply unrealised.

There are however some glimmers of hope in places, with the Welsh government committing to a significant overhaul of the education system in Welsh schools, to support and nurture the development of much more than just knowledge and skills, which is the dominant mantra with both the media and British government currently. There is much to be commended in this innovative and imaginative approach and much to be learnt by the other home country governments in signalling the importance of education for life way beyond any single point in employment and the linear thinking demonstrated day after day around equipping students with the *skills to do the job*. This not only shows a lack of appreciation for the complexities associated with employability, enterprise and student success. But also a complete lack of understanding and imagination on the purpose and value of the learning opportunities we provide and how we might best nurture and support the generations of the future. Let's help our learners to imagine new futures and to create new value for themselves.

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Encouraging, Developing and Using Imagination Through Personal Development Planning

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Rob is the former Director at the Centre for Recording Achievement, rob@recordingachievement.ac.uk and a member of the Lifewide Education Team. The CRA was influential in making the case for the introduction of personal development planning (PDP) into UK higher education during the 1990's and beyond. He is in the process of retiring.

Alison is a National Teaching Fellow and Professor Emerita of the University of Winchester. Her NTF was partly awarded on the basis of her work introducing creative and alternative approaches to PDP in higher education. She now focuses on funded research into play-based and playful approaches in HE, academic advising and collaborations and professional coaching. Alison has written extensively on the theme of creativity in teaching and learning including "Engaging imagination: helping students become creative and reflective thinkers" (2014) with Professor Stephen Brookfield and "The Power of Play: creativity in tertiary learning", co-edited with Dr Chrissi Nerantzi. You can find out more about her work at https://engagingimagination.com

> ***What do we have that we can have faith in? Well, we can have an understanding of yesterday, we can have a plan for today and we can have hope for forever...'***
> Tom Hanks, interview on 'Surviving Coronavirus', The Guardian, 6 July 2020

Invisible Imagination!

We use imagination in all sorts of ways and often we don't give it a second thought. We use it to reflect on our experiences and on what might have been and to think about our future and what might be. For the last two decades UK higher education has recognised this in the formalised practice known as Personal Development Planning or PDP. However, the extent to which imagination is explicitly invited from or required by students in this has been debatable and with the benefit of hindsight, more consideration could have been given to its potential role in encouraging, developing and using imagination in the initial framing of policy. Here we consider the discernible movement from PDP as 'top down' policy toward PDP as emerging and engaging practice which explicitly seeks to engage the imaginative thinking of students in considering, and generating ideas about - and for - the 'yesterday', 'today' and 'tomorrow'.

A Potted History of PDP

Believe it or not, many of our current students were not born when the term Personal Development Planning was first mooted in the late 1990's and then reflected in national sectoral guidance recommended by Universities UK, SCoP and others to all universities[1-3]. Indeed, some reflective and planning practice (without the PDP label) was around long before this[4]. Today a range of practice – whether or not called PDP – can be found across programmes and institutions, not only here but across the world.

In this long history, PDP has acquired:

- a definition which focusses upon the active verb, as *'a process that is undertaken by an individual to reflect upon their own learning and achievement and to plan for their own educational, academic and career development* [2,3]
- guidance to support implementation whether at sector (see QAA, op cit) or institutional levels[5]
- evidence of a positive impact in supporting student learning (the EPPI Systematic Review [6])
- use within other contexts such as continuing professional development and workplace appraisal
- challenges on a range of grounds, including (notwithstanding the EPPI Study); the lack of a strong research base, multiple and ill-defined claims in respect of purposes and benefits, and concerns about focussing attention inappropriately upon the private worlds of learners.

The evolution and challenges of PDP

During its long evolution, PDP has taken many forms – and tackled many challenges. Here we are particularly concerned with three of these:

The impact of a national framework and policy, often translated into institutional frameworks and policies. While there are often disciplinary differences in terms of how students are encouraged to engage with PDP, and (many) tutors had previously used a variety of strategies to encourage student reflection and evaluation of their learning experiences, the implementation of PDP as a national initiative potentially served to codify and institutionalise student activity and the production of associated (often assessable) outputs. However, turning PDP into something formal and labelled turned (some) people off; PDP, labelled and visible, seemed to students (and some staff) to be bolted on to the 'real work', not a part of it. This was perhaps inevitable given that it was required to be inserted in some way into the ongoing 'student experience'. Furthermore, in many Higher Education contexts, practices associated with PDP were located within mainstream curriculum and/or assessment processes, including in respect of demonstrating how required competencies are demonstrated in such regulated areas as Medicine or Healthcare professions. These reflect a strong orientation of PDP towards professional recognition and 'licence to practice' requirements. Such a 'frame of reference', emphasising the meeting of external (whether professional or institutional) requirements through common formal mechanisms and structures, may lead us away from a personal focus. While such emphases, though they may not look like it at first, have the potential for imaginative personal thinking and questioning ('what if…' 'how might things have been differently…' 'what might I have done differently'), evolving habits and expectations of how to engage in PDP may have given the impression that imaginative engagement was not required, when no such intention actually existed.

An emphasis upon the written form. When it first began, stimulated by a policy framework which highlighted the expectation that all students would have the opportunity to develop reflective and planning skills, dominant practice was often to encourage students to fill out forms evaluating their progress or to write structured critical reflections. Such approaches, emphasising reporting and cognitive planning, were often repeated on multiple occasions, which did not necessarily engender student interest or engagement (see our third challenge below). Certain expectations and practices may have come to dominate which were never intended, such as the focus on text, while others, such as multisensory formats, were never formally excluded but were initially overlooked.

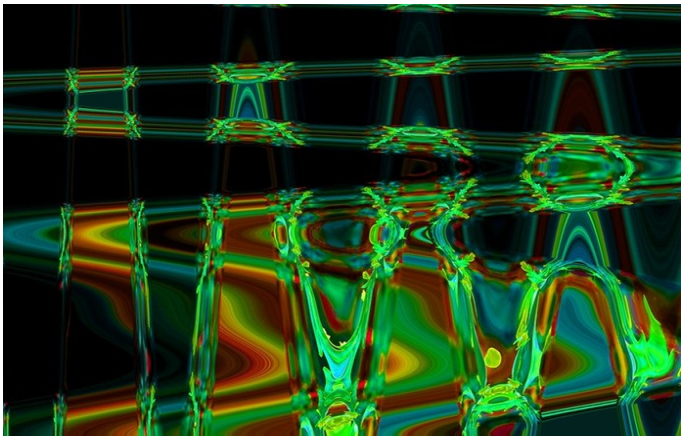
This emphasis on text alone began to be challenged over time to allow students to use multimodal and multisensory approaches to reflection. The argument for this was that different students express themselves in different ways, and individual students may say different things according to the medium they use (drawing, video, playdough, LEGO, embodied movement, song and so forth.)[7,8] Such developments have, in turn, encouraged learners to engage with these self-regulatory processes in more imaginative ways. In some cases, the kind of imagination that might be sparked would be explicitly outlined, in others the invitation to imagine was left open for the student to interpret. In some contexts this was built within the curriculum, in others it was explicitly presented as a distinctly different approach which supported students in 'stopping and thinking – or 'stopping and imagining'. As a result, while PDP was never overtly described in this way in policy terms, imagination has come to occupy a more salient role in thinking and practice.

The importance of supporting significance in the minds of students. (How many conversations have we had along the lines of "You never told me?" "You never asked me"?). Lecturers often mention how surprised they are at some of the capabilities students demonstrate or experiences they have had which they never knew about. Students often respond that they did not think X or Y was significant, relevant or 'allowed', and are equally surprised to find that all are possible. This disconnect can appear in other forms in relation to critical and imaginative reflection, where students assume lecturers just want one form of response, and do not quite believe them when they are told they can be inventive in their modes of self-evaluation.

Such a freedom to imagine allies itself with another important corollary to the success of any PDP strategy. This is the extent to which students are explicitly supported in learning how to articulate their thoughts and even to understand what 'reflection' means. There has been a tendency in some quarters to assume that such an understanding was either natural and latent or absorbed by osmosis through years of study. This, alas, has often proved a limited and insufficient basis for successful engagement, as not all students fully appreciate, or are interested in, the rich complexity, imagination and other cognitive processes in critical self-review. Providing this guidance, and ensuring that students can expand their reflective capabilities using media and forms that suit them, has gone some way to addressing this. Such a personal focus is both important in terms of relevance to students, and also addresses the lifewide, lifelong and holistic potential of personal development planning - something which we all do throughout our lives, without necessarily being conscious of it or calling it by this name. In some disciplines, such as the creative arts, students began to respond positively to PDP when they could see it fully integrated with their study, speaking to both their personal and professional identities, and appearing in a form that inspired them to engage with it. This is not surprising given that how students address questions of developing a clear sense of personal identity themselves necessitates a strong focus upon reflective thinking.

PDP 2.0: a vehicle for imaginative engagement

From these perspectives, the potential significance of imaginative approaches to PDP become more evident. We have rich territory for imaginative engagement: multimodal and multisensory approaches to PDP, the potential to include reflection on the whole person, not just on skills, goals and SWOT analyses. This may be in terms of structuring such activities in novel or imaginative ways, in using novel or imaginative approaches and/or in terms of outcomes for learners (including unexpected outcomes, which might not have been anticipated by those structuring the experience). Both may produce 'richer pictures' of experience, facilitate learner access to their own thinking and self-management strategies and stimulate new understandings and actions as well as the recording of earlier experiences. They also allow for a degree of responsibility and greater autonomy for students in terms of what they want to express and how.



A further challenge here, as with any model or framework, is that by trying to explain and identify the parts and disaggregate them you lose some of the subtle, ephemeral and mixed up elements of how imagination is at work. While PDP itself may be deemed to encompass a range of different tasks or elements, an important perspective in developing conceptual clarity for a research review[6] it is not always easy to separate these into discrete elements in practice. So it is also when we consider how reflective or imaginative processes may be at work in these. One might intertwine with another (or more) or run as a thread through all of them in a subtle and indefinable way. This photographic evocation of DNA, with clear segments, overlain or permeated by hazier mixtures of colour, may go some way to explaining what we mean.

To illustrate such complexity – and variety – we outline below examples of recent work which supports new approaches to such 'imaginative PDP', and to further complement this with perspectives of individual practice at institutional level. In terms of the latter, we are extremely grateful for the contributions of colleagues who responded to a brief which sought to provide sufficient structure for our enquiry whilst not excluding illustrations which may themselves be highly imaginative and individual. Taken together, they provide an 'opportunity sample' which, in turn, allows us to highlight some aspects of 'imaginative PDP' for the wider consideration of the reader.

INVITATION TO THE PDP PRACTITIONER COMMUNITY

[We] invite you to provide a short (up to 150 word) vignette of an aspect of your practice which: includes PDP ingredients (reflection, recording, action-planning and further doing things that are aligned to the action plan) whether called PDP or not; can involve any relevant technology, or none; engages the imagination of students to produce novel or creative responses, whether because you set it up that way, or because (some) learners surprised you with the ways they used the opportunity. (In either case, to explore inventive ways of thinking, or to produce new insights, strategies or solutions, for example).

So, it would be great if you could, within the 150 words:
Set the context briefly (the programme, why and how you implemented the approach);
How the approach is either explicitly seeking imaginative responses and/or has elicited them (so include unexpected outcomes if relevant);
An illustration or two drawn from student responses if possible, so we can enable readers to get close to the outcomes you are describing.

Imaginative PDP across the disciplines

In the last 6 years or so there has been an increase in playful and creative approaches to all aspects of learning in HE[9] . Some of these have built on work in the last 15-20 years to introduce similar creativity and imagination into PDP and/or reflective practice. Constructing reflections in three-dimensional form has been widely used across the disciplines; using things like Playdoh, LEGO bricks, the slightly flatter forms of Ketso or other materials/objects. With these students can conjure their learning journeys in symbolic or metaphorical forms and map out where they have come from, what they have learned and where they wish to get to. (For more detail see[10]). Students also have the opportunity for embedded reflection, i.e. fully integrated into the teaching of the subject. Creative approaches to this have included building the threshold concepts they learn for medical sciences, business and management, veterinary practice, English literature or engineering, in various materials[11]. They can then reflect in their constructions the extent to which they have grasped the key elements of these as well as where they are struggling. The final creation is important, not as an aesthetic piece (although they may be very proud of it), but for being a visual, memorable and embodied item which frames their learning. Imagination is at the heart of the constructing process, and in the telling of the story of the final "product". It is up to each student to intuitively build and to tell that story their own way.

Embodied reflection may simply be reflecting in the moment (see Schön's reflection in action[12]) as part of studying professional practice – think of nursing or health care - or generated through movement or a physical experience. An example can be seen in the case of musical improvisation[13] or dance where expression and reflection are contained within the creative act.

Nachmanovitch[13] sees improvisation as a means of dealing with all the information, from context and all senses, that an individual faces at any time. Improvisation will need to draw on imagination and resourcefulness, for when there is no perfect template for what to do, as well as from any wellsprings of prior knowledge or experience. (One might argue that there has been extensive global improvisation for the last six months). Outside the curriculum, embodied practices such as yoga and mindful meditation are also increasingly being used for student wellbeing.

Within the curriculum, embodied enactments in subjects other than the arts may include role play in court room settings as part of learning law, or in simpler forms, using all kinds of walking. In Walking Coaching, where students walk in pairs and have either guided conversations using coaching prompts or freer ones on a given topic (or not). Popular for stress relief and contemplation have been walks within a geometric form such as a labyrinth, adopting certain protocols. Another example is Silent Discussion, where students are given a question to consider, written in the middle of a large space on a board or wall. In silence they can move back and forth to the board, making their comments, annotating those of others, contributing pictorially or symbolically or in text. The rhythm of movement in silence to and from the board and in and of each other's space (which is a natural one, not something forced or choreographed) and the iterative reviews of what has been written and what it stimulates in students' minds can all provide material for an aspect of PDP. When the writing has exhausted itself the group together can review the board and note revelations, patterns, gaps, questions, next steps. It is both a communal and individual reflection on their responses, what has been created and how it felt to do. Other activities, such as the Privilege Walk, can be an aspect of embodied PDP by providing students with the opportunity to physically represent and reflect on advantage and disadvantage in response to questions. More radical movement-based activities which also generate raw thinking material for PDP may be those where students are invited into spaces, but given minimal guidance as to what they are expected to do in them. This is where their ability to imagine, or sense that they have the right to imagine and interpret, with no rule book comes into play. The act of imagining combined with the resulting behaving may be a powerful means of helping students tap into what they understanding proper learning to be and how this makes them feel. Others may be enactments or role plays integrated into the learning of the subject such as historical periods, political issues or conflicts, with the reflections on the experience central to student understanding of both events and their own grasp of these.

As we can see thus far and will see further in the vignettes below, imaginative PDP can either resemble familiar teaching strategies or be very distinct from them. In Cosmetic Science the use of a double entry journal to log progress with perfumery formulation may strongly feature scientific observation and reasoning. It may also include more imaginative considerations such as the impact of particular scents on human experience and emotion. In advertising, copyrighting, brand management developing ones' imagination for course related, as well as personal, reflection may be entirely in keeping with the subject. How we imagine and when we express it, therefore, may vary significantly across curricular experiences. In terms of specific practice in institutions, the following four vignettes from different institutions and curriculum areas may help in bringing some of this richness to life.

Vignette 1: *Creative Problem Solving is a difficult skill to evidence. In a module of the same name, included as a 15 credit, level 5, core module in the business degree pathway, our emphasis of the module was to give students the tools and experience to think about problems, but also to encourage them to reflect on themselves as 'creative problem solvers'. We ask students to present their experience using a digital story[14]. Just the bringing together of images and voice as video generates an interest. Just the process of creating a moving set of images to help tell a story engages imagination.*

Students can choose how to tell their story and how to produce their video with most adding voice to PowerPoint and saving as a video file. Some choose to do more by using software known to them e.g. iMovie with transitions and background music. This freedom did encourage imagination and the discussion of how to reward unintended learning outcomes.

Digital storytelling offers an ideal means of assessment. It encourages students to think reflectively about what they have done and encourages them to work creatively with images. They are guided by marking schemes, and the recognition of a creative problem-solving process does encourage imaginative outcomes. The video can be easily added to an e-portfolio or a social media profile.

Vignette 2: At the University of …. Medical School, we explored using the LEGO® SERIOUS PLAY® (LSP) methodology with second year medical students (#360) as part of their professional development through 'hands on' group activities to encourage students' creativity and enhance reflective practice. Students were encouraged to critically think about their learning needs; share expectations and concerns about their transition to clinical practice and generate future learning plans. Overall using LSP was positively received by our students and helped to break down barriers to reflective practice.

"The session allowed me to think about my strengths and challenges in an abstract way and express and understand them more" (S1).

"I realised listening to others comment on their models that we all share many of the same challenges" (S2)

Vignette 3 offers a truly multi-media approach. As the tutor explains: *I use a portfolio in a level 7 module on our Postgraduate Certificate in Academic Practice using a patchwork assessment. This is a key definition for me:*

"… a patchwork is not just a 'collection' but a 'pattern': in the end it does have a unity, albeit made up of separate components. To begin with it is defined by academic staff, as they carefully derive a sequence of tasks from the course material. And finally, it is … re-defined by individual students, … to write their final section as an interpretation of what this course material 'means', to them" [15].

My assessment is not just text based, it consists of 6 independent patches including; one video, two reflections, I log, I critical incident and 1 image-based patch. The 'stitching together' can be done as a written reflection or a video or a narrated power point.

With electronic options for portfolios, let's be creative with assessments.[16]

Finally, **Vignette 4** brings imaginative PDP into questions of future career. The tutor writes: *on a Business Systems and Technology programme, I ask my students what do they imagine they want to be? To generate a range of ideas I ask the million-pound question. "I guarantee you a million pounds and once you had spent it, I would give you another million; but you have to do one job - what job would that be?"*

The initial answer is usually a job associated with their present studies. I ask again, though this time suggesting if that job no longer existed what would be their alternative? The alternative generated can be quite surprising for the student. Repeating the process generates more ideas and more opportunities to actively listen to the student and reflect back their thoughts.

If the student becomes animated and excited, then this is usually the idea to explore further. Why is that idea exciting to you? What did you do today to make that idea become a reality?

Some features of imaginative approaches to PDP

Based upon our thinking so far, and the vignettes we offer, it is clear that efforts to prompt and integrate use of the imagination into PDP have been in use for some time. However, there is still plenty of scope for these to increase and be fruitful. For this to happen we suggest that imaginative PDP is likely to:

- Be integrated within subject teaching, or unpacked in relation to it, using approaches which may be imaginatively different from the dominant pedagogy of the subject itself.
- Allow students some autonomy and choice in terms of how they will express and record their PDP.
- Stimulate learners to think about themselves and their experience in different and more personal ways. For example, in a History module when students are invited to identify with a particular 'actor' from a historical context and present their views from that perspective, also ask the question 'what does choosing the 'actor' I chose say about me now?'
- Be helped either when learning experiences take place in less controlled environments (off-campus, for example) and where there may not be a pre-determined/single 'right' answer to the challenge set. Such a focus encourages students to develop the capacity to recognise and respond appropriately to the situations with which they are confronted, a core capability in the development of self-regulation[17].
- Use multimedia, multisensory and dialogic approaches to develop and highlight meaning and significance.
- Use digital technologies to integrate and display artefacts which in turn can help to make new connections and facilitate additional understandings

- Pay attention not only to 'who I am?' questions but also seek to consider 'who – and how - might I become?'
- Allow attention to affective as well as cognitive learning (not only how well did I do in terms of the task but also 'what did I get out of this for **ME**…')
- Be called anything but PDP.

And finally…

In writing this chapter we have focused on the possibilities for developing PDP within the academic context. However, a key point for us has been to consider the effectiveness of PDP practice without the label. After several months of living through the impact of a global pandemic we are aware as authors of how much 'PDP' we have been engaged in every day, without even noticing it. We have changed behaviours, made choices, reviewed what we believe to be normal, found inventive alternatives to usual practices, learned about ourselves (whatever our ages), perhaps shifted our priorities and goals. We may have written a few thoughts down, but it is more likely that much of our action has been based on our imagining. That is something to think about as we encourage staff and students to revitalise approaches to PDP in the future.

Acknowledgements

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Notes and Sources

1 In May 2000, following consultation with the sector led by QAA, UUK (then CVCP), GuildHE (then SCoP), Universities Scotland (then CoSHEP) and QAA published a Policy statement on a progress file for Higher Education. Subsequently (2001) UUK, SCoP, Universities Scotland, the Learning and Teaching Subject Network (LTSN) and QAA published Guidelines for HE Progress Files, designed to help HE providers develop and introduce Progress Files.

2 Universities UK et al (2001): Guidelines for HE Progress Files. Online, at https://dera.ioe.ac.uk/8480/1/progfile2001.pdf (Accessed 17 July, 2020). See also the framing of PDP in terms of a series of actions and processes, as Gough et al (2006) noted: 'PDP contains:

- planning (how to achieve objectives or general change);
- doing (learning through the experience of doing with greater awareness)
- recording (thoughts, ideas, experiences, evidence of learning through writing, audio, video, visual or other means)
- reviewing (reflections on what has happened, making sense of it all)
- evaluating (making judgements about self and own work and determining what needs to be done to develop/improve/move on)'

3 Quality Assurance Agency (2009): Personal development planning:
guidance for institutional policy and practice. Online, at https://www.qaa.ac.uk/docs/qaas/enhancement-and-development/pdp-guidance-for-institutional-policy-and-practice.pdf. (Accessed 17 July, 2020)

4 Assiter, A and Shaw, E.: (1993) Using Records of Achievement in Higher Education. London, Kogan Page.

5 See e.g. https://www2.le.ac.uk/offices/ld/personal-development-planning-pdp/infostaff, https://help.open.ac.uk/pdp, https://www.plymouth.ac.uk/about-us/teaching-and-learning/guidance-and-resources/personal-development-planning-pdp

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11 Barton, G., and James, A. (2017) Threshold Concepts, LEGO SERIOUS PLAY and whole systems thinking: towards a combined methodology**'.** In Practice and evidence of the Scholarship of Teaching and Learning in Higher Education (PESTLHE), 249-71.

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14 Curwin J. and M. Schmidt, (2018) Exploring creativity in business education: Case study of a Creative Problem Solving Module, Creative Academic Magazine, Issue Number 9B March 2018 (p.29) Online, at: http://www.creativeacademic.uk/uploads/1/3/5/4/13542890/cam_9b_april__2_.pdf (Accessed 29 June 2020).

15 Winter, R. (2003) Contextualising the patchwork text: Addressing problems of coursework assessment in Higher Education. Online, at: http://www.cetl.org.uk/UserFiles/File/reflective-writing-project/PatchworkText-winter.pdf (Accessed 20 July, 2020).

16 For examples of other practice in this area see https://dpta.wordpress.com/ . The Tutor further notes that 'a key aspect of this course is that each module has a completely different assessment so this show cases how things can be done differently as all the students are also members of staff. Quite a few have redefined their portfolio assessment to patchwork.'

17 Knight, P. and Yorke, M. (2004): Learning, Curriculum and Employability in Higher Education. London: Routledge Falmer.

Engaging Learners' Imaginations by Gamifying their Experience

Nathalie Sheridan

Nathalie holds undergraduate and postgraduate degrees in education and since her PhD focuses on translating creative pedagogies into higher education. She is running two postgraduate courses on the MEd in Academic Practice: Creative Pedagogies for Active Learning and Designing Educational Inquiries at the University of Glasgow, with a focus on authentic assessment, in which the learners draw from their lived experience, and own practice. Encouraging them to realise the importance of life experience in their academic practice.

Context

I am leading a masters' level course around research approaches for educational inquiries. The course is challenging, as my students are colleagues, often from non-cognate disciplines. Sustaining involvement with a 20 credit two semester course is difficult, and there is a lot of cognitive dissonance to overcome for some learners who have undergone a complete internal paradigm shift towards qualitative and even ethnographic research, to trying to understand the necessity of methodology and theories for a sound research design. All research designs have to be submitted to the ethics committee for approval: a notoriously difficult challenge, so part of the course is to prepare students for their ethics application. I liken the committee to a fortress and one could imagine that researchers have to conquer a bastion with thick stone walls. I am living in Scotland so this image from one of our outings springs to mind.

In order to inspire my students' imaginations and sustain their interests, I have visualised the challenge of conquering said bastion, as a quest, with different side quests and challenges that learners have to overcome. We know they are more likely to be successful if they are working in peer groups—or merry bands of explorers. And somehow suddenly, I found myself gamifying the research methods course. I took out my A3 drawing pads and searched the internet for how to draw maps. The map I made is shown in Figure 1. I can proudly announce Google Image Search within my photo library does recognise it as a map. Now the next step I am working on is putting this map into H5P and adding interactive points into the map. Each of these interactive points will open the activity for the corresponding week of the course.

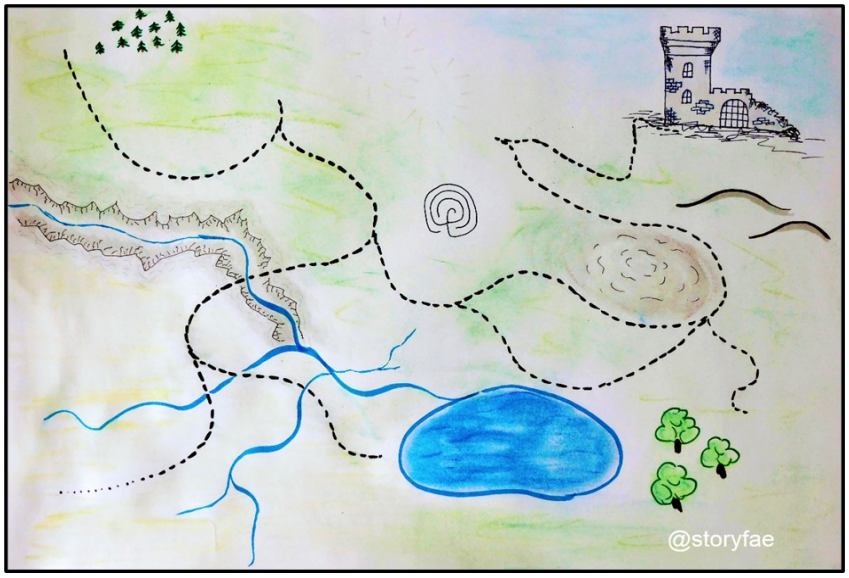

Figure 1 Conquering the bastion -my map of the quest that is my research methods course

So while I was becoming rather excited by the prospect of an adventure--a quest to send my learners on, I realised that encouraging active participation is a key aspect that needs to be considered in any design. Enter: doubloons, coins, dragons and dragon eggs. As the learners are on their journey they collect doubloons, for self-study activities, reading a chapter or research paper, writing a small reflection. Five of these can be exchanged for a coin, but the learners can also earn coins. Coins are earned for collaboration, providing peer feedback, sharing resources, contributing in team discussions. Five coins will win the learners a dragon-egg, bronze, silver, and gold. Once the learners have collected all three eggs, they will have participated in all the activities in the course. There is some space to earn additional doubloons and coins (John Lyons CC BY NC SA) if the learner was not able to meet one of the tasks.

I ran the idea past some of my current students who (like me) were rather excited by the notion of a quest and asked if they then could choose their own names. I think it's a good way to personalise their experience and another way to engage their imaginations.

My intention is to underpin the 'course' with a strong storytelling theme, so I will also make some videos for each of the five units (or quests) to tell the story and keep the thread going and reinforce the idea that we are on an adventure. I am going to utilise multimedia storytelling to make the course as interactive and accessible as possible. The learner will get what I call character cards. They fill in one about themselves, which encourages the learners to engage in reflective practice throughout the year, they can copy and paste their doubloons, coins, and dragon eggs in the card, and take notes of their peers. For instance, if I am familiar with qualitative methods but do not know how to design a questionnaire, and one of my team members (or course members) is familiar with questionnaire design. I would get magic points for making this connection and finding this out. Five magic points can earn the learner another coin.

The course also focusses on six typical methodologies and six typical methods used in educational inquiries and Scholarship of Learning and Teaching projects. Each of these will have their own character card. I will pre-fill some of the key information and links to reading into these cards, the learners then collaborate to fill in the rest. There are also wild-cards available, for when learners find a methodology or method that is not covered in the course but they become interested in using for their project idea. I am still on the quest for a dragon, as a space holder I sketched one and then edited it in various apps.

Figure 2 Important symbols in my game—doubloon, dragon and dragon egg

The work of my imagination

When I was teaching the course last year, I noticed how much the learners struggled. As a teacher, one of the important roles for my imagination is to see the world through the eyes and experiences of my students. So, I listened closely to my students' feedback, and their struggles, and the things that were not said. Imagining how I as a learner could navigate this treacherous territory more easily—I would need some team mates, a plan (map) would be good, knowing where I am and how things related to one another, seemed to have fallen through the grid.

The course content is hard, and the ethics elements can be hard and for some boring at the same time, which is not a good combination to keep anyone's attention and motivation up. So, seeing the course through the experiences of my learners enabled me to empathise and this new awareness motivated me develop a new approach. It was as if ethics became the perfect villain in a story, that had to be fought and defeated. I had realised that we are already implicitly addressing ethics as if it were an evil in the story and so it was only a small step for me to imagine turning the course into a real story. I love stories, fairy tales and adventures, and once I had shifted my perception of the course, I could see the adventure emerging from the different course elements. The challenging aspects became quests and tasks the students will have to solve. Once, I had written a brief story about the course and outline, I approached friends who are avid role-play gamers, and two colleagues who are gamification experts, the feedback was positive from all.

The educational literature indicates that gamification can encourage students to become more engaged and continue to stay engaged—which is often difficult for a year-long course. We know from psychology that extrinsic motivators (like participation in a game), linked with learning achievements can be very powerful. Well, there was a castle, so if there is a castle there has to be a dragon—narrative causality demands either a princess or a dragon or both. I decided for the dragon, then the question was how do you get a dragon? From dragon-eggs—obviously. But I wanted the challenge to continue throughout the year, so the learners will have to collect three dragon eggs to get their dragon. However, to feel achievement throughout, every single activity they undertake will earn them doubloons or coins which accumulate over the course to provide them with enough eggs to finish the course with their dragon.

I used my imagination to create an overarching story and form a game but I also realised that I was using this pedagogy to try to engage learners' imaginations more effectively and motivationally than the more traditional form of teaching I had used previously. As humans we live our lives through our stories. Our memory (according to neuro and cognition sciences) works in stories. But I think the creation and involvement in story is only part of the reason for engagement, the other motivational force is the element of play in this type of course design.

During the Internationaler Spielkongress in Munich last autumn, one of the presenters spoke about play as a biological imperative. This rang true with me. When I introduced Lego and playdough in teaching academics on the postgraduate certificate in academic practice, I was surprised just how much my colleagues embraced the opportunities to play—apparently, my Lego session had a reputation, and one of the learners said they were looking forward to it all semester. Observing the in-depth conversations and reflections emerging from these activities were, experientially, unrivalled to other peer discussions I had facilitated before.
I also think gamification and the imagination we use when we play breaks down the stop rules, which social psychology explains as the rules, we often are given as children, that stop our imagination and creativity. In other words, we subconsciously apply rules that inhibit our possibility thinking - our ability to see possibilities and opportunities everywhere. In my teaching I hold a metalevel position where my learners are also teachers themselves, and I want to encourage them to become more aware of possibilities. I want them to step over the inherent stop rules and become curious and open again about their own teaching practice and not let 'this is how things are done' inhibit their potential for self-emergence.

Firing students' imagination through stories and carefully crafted cases
Fiona Winfield

Fiona Winfield is the Employability Manager for Nottingham Business School (NBS), Nottingham Trent University (NTU) and an HEA senior fellow. Prior to that, lectured in Marketing and held various roles in NBS. Before moving into academia, she worked in sales and marketing in the construction industry. She is a member of NTU's Sustainable Development Academic Forum and in 2017 won the Green Gown Award for Employability (large institution). She has contributed to The Business Student's Guide to Sustainable Management, and co-authored a BPP revision guide for the Chartered Institute of Marketing. She is a keen linguist and paints watercolours, and is trying to master the drum kit.

The cultural challenge for international marketing

Prior to moving into my current Employability role, I worked in international marketing, and then taught the subject at Nottingham Business School. Having studied and worked abroad, the fact that people in different parts of the world would react in different ways to similar goods and services has always interested me, and many work trips and holidays have been spent collecting empty packaging and adverts, or photographing amusing shop signs and products. I naively thought that my students would find these curiosities amusing and interesting, and that they would be fascinated by the theory behind why different cultures might be more or less attracted to (or be put off by) packaging of a specific colour, or to a brand name or logo.

All too often however, students behaved very ethnocentrically and failed to understand what might be the issue with calling a toilet manufacturing company 'Toto', why putting an owl as part of a logo might be a bad idea in some cultures, or even why giving away green baseball caps as promotional gifts might be unwelcome in China. Luckily, our classes invariably comprised a mix of different nationalities and cultures, and this allowed for peer learning: exploring slang usage, or meanings of symbols and local customs in different parts of the world. When prompted, many people remembered that Toto for example, was Dorothy's dog in the Wizard of Oz, others associated the name with a clown, although almost no students (and only a few colleagues) had ever heard of the American band of the same name from the 70s and 80s. It did however take a while to uncover the reason why in Nigeria the name Toto caused much mirth, and although students flatly refused to explain their embarrassment and amusement, it did not take much imagination to realise that if the Japanese company ever *did* launch their product there, they would definitely need to rename it.

Trying to teach theory in isolation of real life examples, would of course be dry, and even using interesting pictures on slides could still require a leap of imagination that might be too far for some learners who had perhaps never travelled beyond the UK. Many assumed that what seemed 'normal' for them must surely be the same the world over. The key task was to encourage them to see that in international marketing one should never take anything for granted, that one should always question assumptions, and try to imagine how others might react.

With Toto, we asked the students to envisage how the company might enter the European market. We deliberately chose the term Europe, as we wanted them to start by defining this (did we mean the continent, the EU or even the EEA?). We found that many students were aware that in certain parts of the world facilities were very different (for example on gap years they may have experienced squat toilets or an absence of toilet paper). However, few seemed to be aware that building regulations (e.g. electrical power points in bathrooms), hygiene practices (e.g. the use of bidets) or health preoccupations (e.g. the use of shelf toilets) would vary so much within just one continent.

Stories and cases to ignite imagination

I was lucky that when I arrived at NBS, nearly three decades ago, I worked in a great team of colleagues who taught international marketing through their own case studies. These were not however dry factual cases, briefly describing what a company had

done, as I had experienced at business school in the 1970s. They were very much stories which painted a picture of a company in a particular situation, where the managers needed guidance, and the students needed to assume a specific role. Although storytelling has been around for a very long time, it was not really promoted as a vehicle for teaching in Higher Education at that point, and we certainly did not think of what we were doing as telling a story, but that is in effect what we did. We named the key characters, gave a them a bit of a back story, there were invariably puns involved, and clues were dotted around. Even as recently as 2016, Julie Lennard[1] in her article "How to Punch Up Your Academic Writing with Storytelling" commented that storytelling was not always taken seriously, but that it could "promote learning, generate interest, and make academic research come alive".

At NBS, we were conscious that English might not be the first language of all those studying on the module; we welcomed many exchange students and over the years we had increasing numbers of international students in the cohort. For some years, the module was also taught in Crete and Slovenia, so we had to be careful not to make the stories too complicated or too dependent on understanding specific turns of phrase or contexts. We did feel however that making the cases interesting would draw in the students and make the situation more memorable. We required the students to assume a role, to imagine they were a new marketing intern, or a consultant brought in to advise the Managing Director for example. Anyone who had attended the relevant lectures and read around the subject should then be able to advise the company on how to resolve their marketing conundrum or help them plan the best way forward.

We also tried to ensure that in each of the cases there was a message that allowed the students to understand the bigger picture. Our Banoffee Pie case for example, involved looking at how Fairtrade status allowed bananas and sugar to move from being commodities to becoming a brand, while covering the ongoing WTO discussions between the USA and the EU.

With the Toto case we discussed the fact while their customers were spending thousands of pounds/ dollars on fancy lavatories with built in water jets, warm seats, music and even a modem (for sending urine test results to their doctor), at that time 40% of the world's population had no access whatsoever to *any* facilities. This also allowed us in later years to highlight the United Nations Sustainable Development Goals (SDGs) [2].

One criticism of marketing teaching has sometimes been that there is too much focus on fast moving consumer goods (FMCGs). To provide a gentle introduction, we did indeed start with food, familiar to everyone, and we explored snacking habits in different parts of the world. Meanwhile another case centred on the introduction of Qibla Cola in the UK and looked at fizzy drink habits in different countries, allowing us to show Cola Turka adverts featuring Chevy Chase, and to discuss 'Kickapoo Joy Juice'! Yet another case featured the Shangri-la hotel group's arrival in the UK, originally planned to coincide with the 2012 London Olympics.

All these topics were ones that the students could hopefully relate to, and feel comfortable with, then we pushed them to try and put themselves in the shoes of employees, customers or suppliers from different cultures. Aside from the very accessible products and services, we explored many other different scenarios, covering both small- and medium-sized enterprises (SMEs) as well as multi-nationals, and industrial products as well as consumer goods.

These topics clearly did stick in people's minds as over the years I have been contacted with photos, advertisements or links to websites or videos, by graduates who had come across unusual toilets, food or building products. The topics had clearly resonated with them.

Pedagogical considerations

In an ideal world, students would have the chance to acquire their marketing knowledge and skills via real world experience or simulation[3] enabling them to move from "a passive information acquirer to an active learner". Case studies are an alternative means to replicate experiential learning and are especially useful with undergraduates who have probably not yet had much work experience.

Through using cases and stories in the context of international marketing, we sought to encourage our students to draw on their own (and fellow students') life experience, combined with secondary research, to imagine how people from different cultures might react in given situations. We pushed them to move beyond their own 'semantic memory'[4] to try to overcome their automatic cultural assumptions. In so doing, they were required to imagine what they would do if they had the authority and resources. So they explored 'what-if' scenarios[4] .

With our cases, there were no right or wrong answers (although arguably some suggestions would be more feasible, or perhaps less risky, in the given circumstances). Some learners struggled with this and wanted to know 'the' answer. What we encouraged instead was for them to put themselves in the shoes of others, to try to see the world from a different angle, to conjure up different scenarios.

So we used *our* imagination as academics to try to create an interesting tale that would allow the students to think about theory in context; the students in turn had to use *their* imagination to assume a specific role, to apply the theory to the given set of circumstances and then make appropriate recommendations.

This was something that clearly worked in the case of one of our 2012 alumni, who recently stated in their NTU graduate profile [5] on the University's website: "*I am very pleased that the International Marketing and Communication module which I was taught as part of my International Business degree at Nottingham Trent has been extremely useful and relevant to me. This module… really excited me; the case studies and theory that was taught has prepared me soundly for working in marketing in the South-East Asian market.*" In subsequent discussions, he was even able to remember the details of some of the cases that we had studied, so they had clearly captured his imagination!

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5 https://www.ntualumni.org.uk/getting_involved/graduate_profiles?source=netw15pdf

‘From Conference to Café
Imaginative approaches to Public Engagement’

Kevin received his Ph.D in Physics from the University of Hull, and pursued a career in commercial research in photonics for some twenty five years. During this time he was an honorary visiting lecturer at the Universities of Glasgow and Salford, and elected to Fellowship of the Institute of Physics. Whilst working in industry he developed a growing interest in education, and creative skills, and the award of a NESTA fellowship in 2002 enabled him to pursue these interests full time. In 2008 he took up a post at the University of Leicester as research skills developer, and then at Queen Mary University of London as the enterprise and research skills developer. More recently he has worked as an independent research skills developer for a number of higher education institutions and industries in the UK and Europe and is a guest lecturer at Leeds University and City University, London. He has published widely on his earlier research interests, and more recently on innovation and creativity. He is an active member of the #creativeHE community.

“People don’t always remember what you say, or even what you do, but they always remember how you make them feel.” **Maya Angelou.**

Public Engagement (PE) is a component of the socio-economic strand of the impact agenda in the UK and Europe, and a brief description of its value to researchers and the public is summarised below:

“Public engagement may be included as one element of your Pathway to Impact. Engaging the public with your research can improve the quality of research and its impact, raise your profile, and develop your skills. It also enables members of the public to act as informed citizens and can inspire the next generation of researchers.” (http://www.rcuk.ac.uk/pe/)

Whilst university researchers are generally skilled in presenting their work to an academic audience, when engaging with the public, a considerable use of imagination, shifts in perspective and approach are required.
As the Impact agenda was rolled out, a lot more academics began to accept invitations to present at public events such as The Café Scientifique, Knowledge Cafes and TED lectures etc. Based on feedback from these events, a gap in presentation skills had been identified by support services in a number of universities, and staff development workshops were organised to address this.

As part of this work I devised a workshop called ‘Public Engagement and the Art of Storytelling’, which was presented to Ph.D students and academic staff at a number of UK universities.

The main challenge in the design of this workshop, was to find ways of facilitating a more creative and imaginative approach by the attendees, for re-framing both the content of their existing presentations, and their style of presenting.

In the aforementioned workshop, the attendees first developed a short academic presentation on some aspect of their research, which they presented in their groups. The remainder of the workshop was aimed at imaginatively transforming the academic presentations into one suitable for a public event.

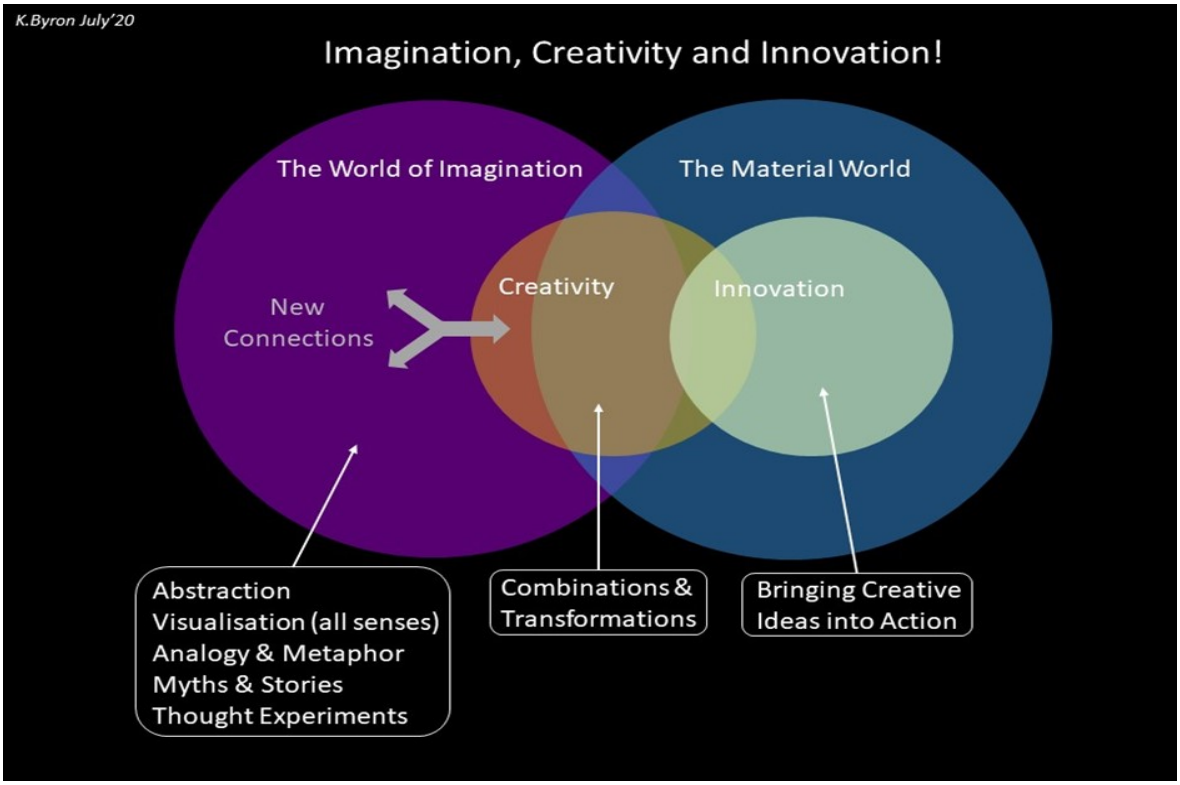
A personal perspective on terminology

Before describing the various exercises to achieve this, it is worth clarifying - albeit at a more abstracted level from the practicalities of the workshop - what we mean by imagination, and how it differs from creativity, and innovation. These words are still randomly inter-changed as if they were the same thing, so hopefully Figure 1 will add some clarity to their differences.

In brief, imagination could be described as the ability to experience - in a non-sensual way - things that do not exist in reality, as well as intangible constructions of things that do exist in reality. Creativity concerns new ideas, and is in part facilitated through making new connections in the imagination. Finally innovation involves action, largely in the real world, but fuelled by creativity. Simplistic as these descriptions are (because to some extent they overlap), they serve as suitable reference points for the design

of the exercises used in the PE workshop described here. The modalities of imagination[1] that were explored in the workshop included visualisation, analogy, and developing stories. These were combined through transforming existing presentation material in a creative act, which resulted in new artefacts (eg PowerPoint slides) and performance (the public presentation and interactions with the audience). For a more in-depth discussion of these terms see the lead article in this issue by Professor Ann Pendleton Jullian[2].

Figure 1 Representation of the relationships between Imagination, Creativity and Innovation.



A typical academic presentation

In the STEM disciplines presentations are generally expressed in the passive voice, and the language aims to be objective and impersonal. The structure of academic papers and conference presentations are similar, and consist of the six main sections summarised in order below:

1. Introduction: Current status.
2. Description of the problem, in the context of current knowledge.
3. Methods: What was done to address the problem.
4. Results: Representative sample of the data acquired from 3.
5. Discussion: How the new results in 3. have advanced knowledge in the disciple. Why the new knowledge is relevant and important.
6. Conclusion: Summary of key points in 5. and future work.

Using story, narrative and drama to transform an academic presentation

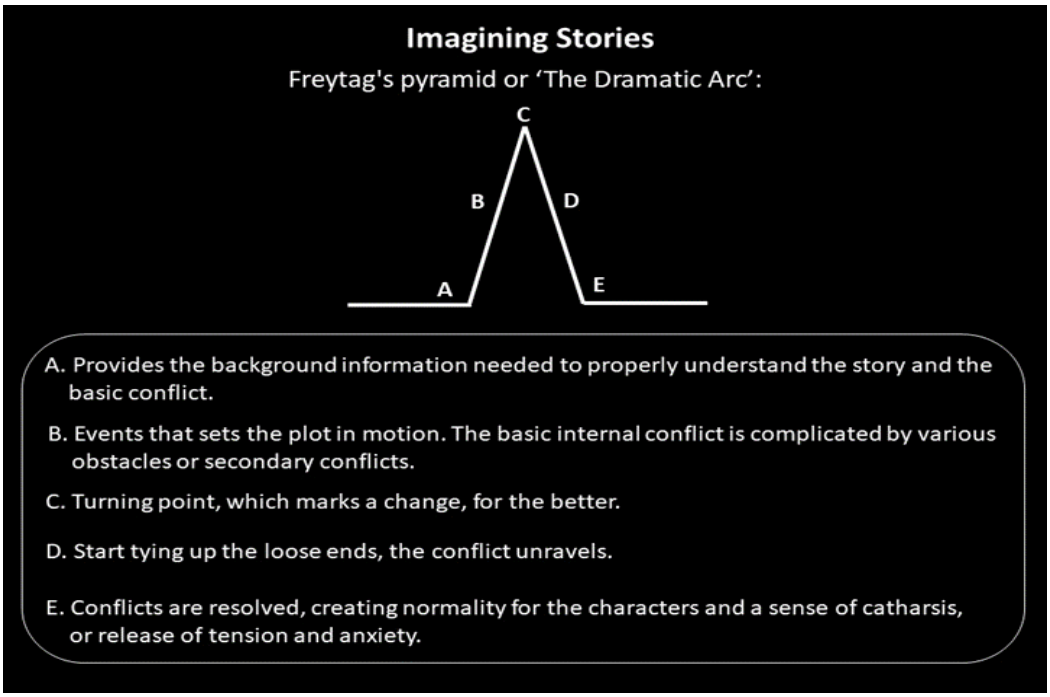
Before transforming an academic presentation into something more palatable for the public, it is important to draw the distinction between a story and a narrative. In brief, a story focusses the attention on what is told, whereas a narrative draws attention to how it is told. In this workshop it was necessary to transform both the narrative and the story. The key actions in these transformations of academic presentations are summarised below.

Step 1 Referring to the earlier structure of academic documents, the first requirement for a PE presentation is to bring a greater emphasis of aspects of the content of Section 5. (Discussion) to the beginning of the presentation. The question of why the research is important (to society) needs to be stressed right at the beginning. In academic presentations, this is unnecessary for

specialists working in the same area of research. The importance of 'Why?' in a variety of contexts is stressed in one of the most popular TED talks ever screened, by Simon Sinek on 'How great leaders inspire action' (https://www.ted.com/talks/simon_sinek_how_great_leaders_inspire_action). Here he emphasises: "People don't always get what you do, but they always remember why you do it!". Further changes are made in **Step 1.** later, after a story has been created in **Step 2** below.

Step 2. is aimed at creating a different narrative, with a measure of drama in the presentation. Here, reference is made to Freytag's Pyramid, shown in Figure 2 below. Freytag, was a German author of the mid-19th century who developed his pyramid after studying a wide variety of stories, and identified an underlying pattern of stages represented in the pyramid.

Figure 2 Freytag's Pyramid.



It's important to stress that only a light touch of drama is required in PE presentations compared with other media, but the order of events in the pyramid does help in providing a more engaging structure to a presentation.

Returning to **Step 1.** and the importance of stating why the research is important first, a useful way of creating the 'basic conflict' described in **'A'** in Figure 2, is to open the presentation with an anecdote and a question related to that anecdote, that implicitly states the importance of the research. For example, suppose the presentation was about the importance of introducing more opportunity for individual creativity in education, the opening words might go:

"Did you know that very few students who study science at university are aware of the role of creativity in advancing science? Indeed when I was an undergraduate, before embarking on a career in research I used to think…….. and I'll tell you later about how all that changed in a rather unexpected way. But first let me explain why creativity really is important more generally in education….."

Tension has been created straight away with the question and the unfinished story which will be resolved later, and the audience will be waiting for that resolution.

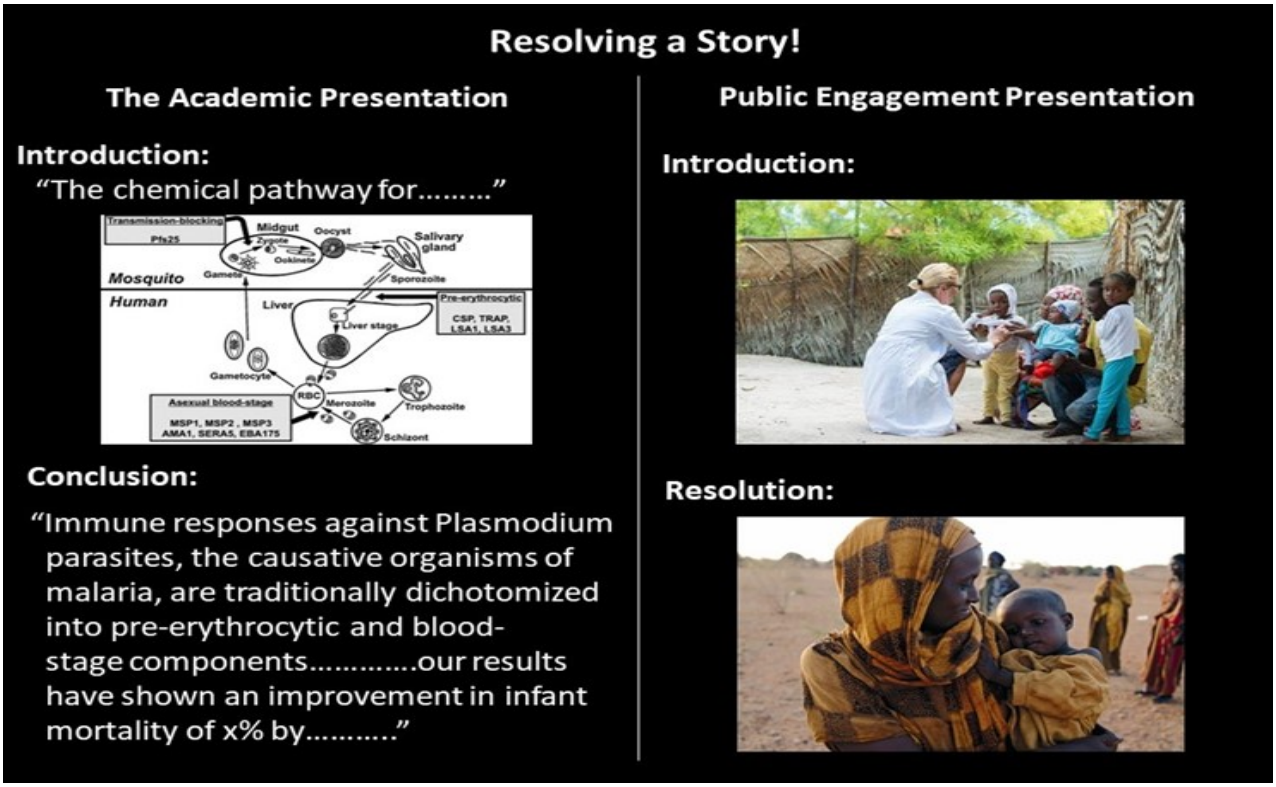
To create these anecdotes really does require the attendees to apply their imagination, and relate their work through a story that connects with the question of why the research is important. This was the next exercise in the workshop, and the attendees were invited to visualise their research in terms of societal benefits. The aim was to try and see through the eyes of a beneficiary of the research, and what their 'before and after' story might be. In some cases the attendees had some awareness of this, but it

was usually based on factual statistics rather than an individual anecdote. The final part of the story in Figure 2 requires the earlier tension in the story to be resolved.

Illustration

The best way to demonstrate this is with another example shown in Figure 3 comparing the two types of presentation, and this concerns research into treatments for Malaria.

Figure 3: Differences between an Academic and a Public Engagement Presentation.



The academic presentation introduces the complex chemical pathway in the research for the transmission of Malaria. It then goes on to describe the work that led to a new vaccine for villagers in rural Africa, where this disease causes a high mortality rate in young children. It concludes with a technical description of the treatment, and the underlying mechanisms for the curative effect of the vaccine.

In contrast the PE version starts with a human story, and gives the shocking fact that in certain areas of rural Africa, children below the age of five are not given a name by their parents because of their low chances of survival if they catch Malaria. The top image shows the new treatment being administered to young children.

The presentation then goes on to describe the research in simpler (but not dumbed-down) terms. The tension created in the introduction is resolved by showing the second image. Here the speaker says that after several villages had received the treatment things improved greatly. The speaker then introduces the small child to the audience shown in the second image, who is less than two years old - by her name…..

Step 3: The use of analogy

Given that researchers in many areas of science are working with ideas that would be considered abstract to the general public, it is important to find ways of communicating these ideas more effectively. Analogies help greatly in this respect, because they arise out of imaginatively inspired connections between two disparate areas of thought. There is the topic itself (the Target domain), and the more widely understood area from which analogies are sought (the Base domain).

Analogies have been shown to improve the conceptual understanding of scientific ideas by helping in the transition of concrete thinking to formal (abstract) thinking. For example Sarantopolous and Tsaparlis[4] showed that concrete thinkers studying chemistry, in which teaching the conventional curriculum also included analogies, performed twice as well in examinations compared with control groups for whom the analogies were excluded. If the base domain includes the human element there is a greater chance the concept will be understood by everyone.

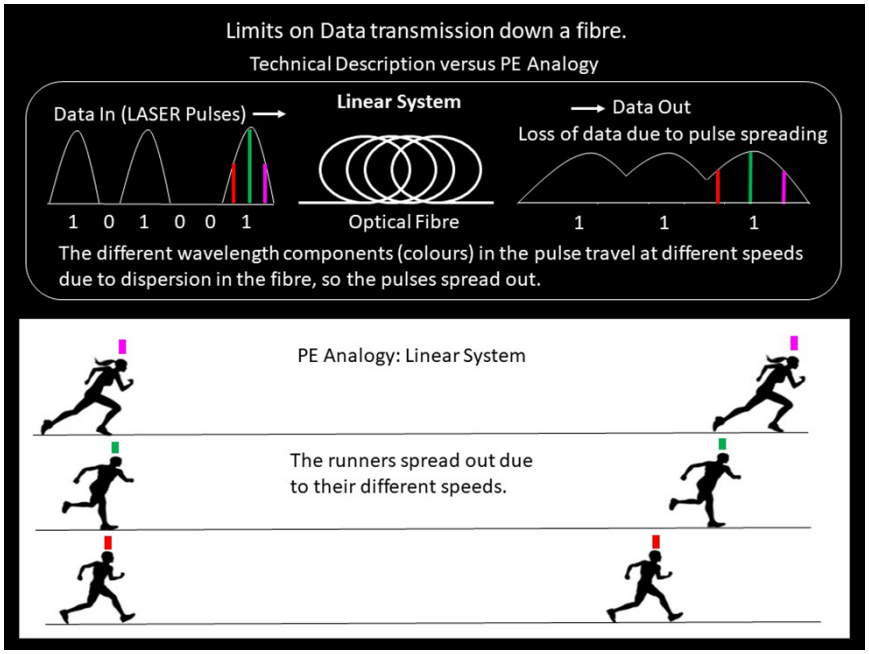


Figure 4 Technical description versus PE analogy for propagation down an optical fibre.

Examples contrasting the technical with the PE descriptions (with a human element), of a relatively simple, and then a more complex phenomenon concerning LASER pulse propagation down an optical fibre, are shown in Figures 4 and 5 below. Even with the additional explanation in Figure 5 (which would not normally be included in an academic presentation) this looks quite complicated to the non-specialist, and the mathematics would be meaningless. However the simple analogy introduced in Figure 4 provides a more imaginative and memorable way of grasping the more complex case shown in Figure 5. In this analogy optical non-linearity is now represented as mechanical elasticity in the fibre.

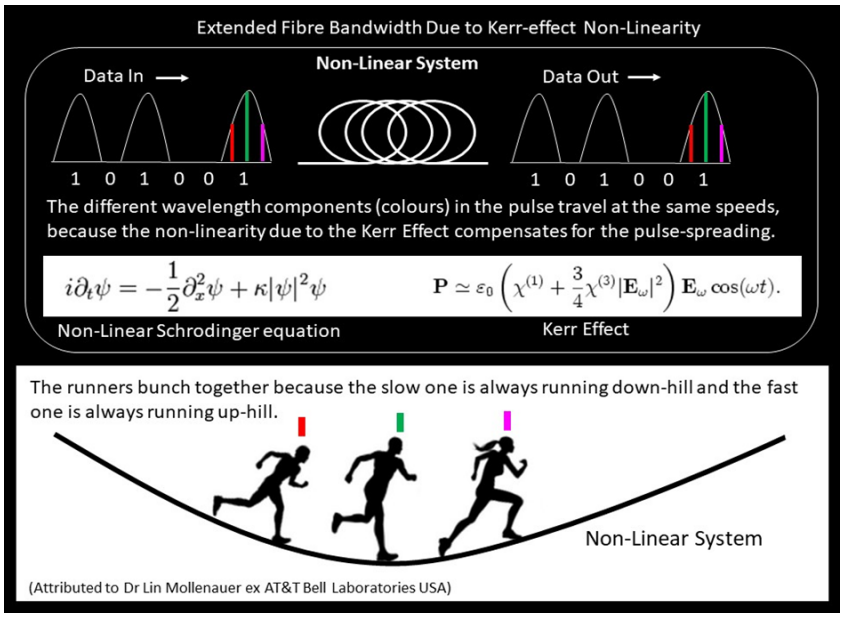


Figure 5 Technical description versus PE analogy of the more complex case of Kerr-effect, non-linearity in propagation down a fibre.

So what is the work of imagination?

The workshop summarised here has shown how different modalities of the imagination can be applied by academics in order to help them transform a highly specialised academic presentation, into an engaging presentation designed for a broader non-specialised audience. With reference to Figure 2 those modalities were stories and analogy, and in practice the act of visualisation played a practical role in envisaging the stories to be told. The outcomes of the work with imagination drew also on the attendees' creative skills to re-design their academic presentation into one suitable for engaging the public.

It could be argued that these non-specialist presentations should also appeal to the imagination of the public audience. This is only true up to a point, because to engage in this case means also to educate, such that all present have a similar appreciation of the ideas being discussed. A fine line in public engagement can easily be crossed if the imagination of the audience is allowed to run too freely with ideas. This has been referred to as 'Edu-tainment' in some quarters, where an increased level of emotional engagement through the use of animation and graphics and moving music, is traded-off with that of clear, educational engagement. So whilst it is important to work with the imagination in public engagement, a sure foot in reality is also required too.

On a personal note, of all the different 'research skills' workshops I have developed and presented, this one has been the most rewarding, as the attendees often discovered skills they didn't know they had. Although some of the ideas were unfamiliar to many attendees, they welcomed the opportunity to work in a different way with their imagination through the exercises provided.

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The Power of Collective Imagination
Chrissi Nerantzi with contributions from Ben Greenhalgh and Louise Batchelor

Chrissi Nerantzi is an academic developer in the University Teaching Academy at Manchester Metropolitan University and a National Teaching Fellow. She is the founder of the Greenhouse and the #creativeHE open community and cofounder of Creative Academic. To find out more about Chrissi, visit her blog at https://chrissinerantzi.wordpress.com/

Ben Greenhalgh is a Lecturer on the Foundation Art & Design programme at Manchester Met. He has recently achieved Fellow of The Higher Education Academy status and am currently completing my PGCLTHE this Summer. Ben has over 12 years industry experience as a Graphic Designer with expertise in design for print, branding and web. Designer on 'The Invisible King' project, he worked closely with academic staff and students to bring the illustrations, type and book layout together.

Louise Batchelor Is a Senior Lecturer on Foundation Art & Design at Manchester Met. Louise trained and worked as an Illustrator/Art Director before becoming an educator. She is the Art Editor for 'The Invisible King' project, working closely with the students and overseeing the artworks. Louise is a passionate tutor who believes in building confidence through encouragement and example. She is a bird watcher and shares a wildlife garden with all creatures great and small.

The pandemic, lockdown and what followed

There is a tendency to go with the familiar, the traditional what we have always been doing while pushing away and often ignoring and ridiculing new and unusual ideas and solutions. This also happens within higher education learning and teaching practices. Nelson[1] (2018, 4) acknowledges this by stating that "there is a strong pedagogical impulse to eliminate haphazard approaches to learning and sadly imagination and creativity are a casualty." Imagination as a casualty is an uncomfortable and disturbing reality for all those who dream, explore, love adventures, are curious and inquire. Being marginalised because your ideas are different and unusual and perhaps don't fit with the status quo, is something that innovators often experience. Innovators, however, are imagining a different world. In their ideas and the stories they create, they inhabit alternative worlds that can become their reality.

Since the start of the COVID-19 pandemic there has been a lot of conversation about the need for more creative approaches in learning and teaching in higher education to overcome the new challenges and generate imaginative ideas, approaches and tactics that will help practitioners, students and their institutions to engage in stimulating learning experiences that tickle their curiosity and feed their inner desire to learn and inquire. As Crawford[2] (2020, online) says "… the creative vaccine can work its magic on all our minds at this dreadful time..." And while his words relate to creativity within the arts, we see increasingly that we call upon creativity across disciplines and borders to help us move forward in a positive and imaginative way. Jackson [3 p.7] talks about the need for leaders to stimulate "the imaginations and inventiveness of people." Perhaps the time is ripe to make this happen now? Fullan et al.[4] talk about the disruption caused by the pandemic, how we learn to navigate through this new landscape, learn from this experience but also seize the opportunities to re-imagine education[4]. Jackson[5] talks about seeing problems as opportunities – perhaps this mindset is more effective in stimulating our imagination. For me these have been comforting words that have helped me and still do overcome adversity in a positive way. Perhaps as Kleon[6] says, with a positive and generative mindset, constraints and limitations can mean freedom. This definitely applies to how I feel and what I do. Absolute abundance and unlimited resources are probably more a tyranny than a blessing anyway.

During the pandemic I turned to crafting and storytelling. It happened naturally. These are not new activities that I picked up during the pandemic but I started engaging with them more regularly as I felt that they provided me with creative outlets and helped me feel better too. Also I reached out to different materials and techniques. Silver clay is something that I haven't mastered yet… The open invitation to dream, to imagine and to make was not possible to ignore, to forget. Despite being busier than ever before and working long hours to support colleagues in my role as an academic developer, I did feel that I needed to do something different. To find balance and hope, to make and connect with my inner self and also connect with others. To feel

better and help others feel better too during these challenging times. I wanted to help in any way I could and use my imagination, inner commitment and love for creative expression and making.

At the same time, my idea (you will find out about it shortly) would give me a new and exciting opportunity to work more closely with two colleagues from our Arts and Humanities Faculty and some of their students. A live project partnership model as an alternative approach to academic development?

Imaging and creating the picture book

I love writing stories and during the pandemic and particularly after the nationwide lockdown in the UK started, I think it was on 23 March 2020, I found a new inspiration for picture book stories. Because everything was suddenly so different, material for stories popped into my head constantly. I captured them and often it only took me a few days to complete one and move to the next one. In the first few weeks I wrote five. I wanted to capture what I experienced, through my eyes using imaginative storytelling. The floating sofa, In love, How do you know, Leave me alone and the Invisible King are the stories I wrote. They live on my laptop at the moment, except one of them that escaped… and I will tell you more about it.

Le Guin [6 p 110] said about writing, *"It can be useful to think of writing as gardening. You plant the seeds, but each plant will take its own way and shape. The gardener's in control, yes; but plans are living, wilful things. Every story has to find its own way to the light. Your great tool as gardeners is your imagination."* My imagination feeds on the world inside me and around me and guides me to create, to write. I have to admit that I enjoy creative writing more than academic writing. Not because it is less of a struggle, because it can be equally challenging, but because I feel truly free to invent and imagine and create my own story worlds. Something that is not really acceptable in academic writing.

When I write stories, I visualise these while writing. They are picture stories using words. I like that but I am not an illustrator. And while I have not so long ago attempted to illustrate a story, I feel insecure and incompetent in this area. This skill is definitely something I want to develop in the future as I would love to illustrate my own stories especially as I feel so connected with them.

My own limitations in illustration skills could be seen as a problem with what I had in mind. I wanted to turn one of the stories into a picture book and raise money for those in need but also bring hope and fresh creative energy to young readers, their families and carers. The problem became an opportunity. And that opportunity involved others in a collaboration. I selected the Invisible King story, just 88 words. How can this be a story with just 88 words only? I think this is my shortest so far and I have learnt that in picture books less is definitely more. It was from conception an invitation to the reader to participate in imaginary storytelling. To bring their imaginative ideas to the story to add their own words if they wanted to.

Traditionally, picture books are written by one person and illustrated by another one, or the writer is also the illustrator. Picture books with multiple illustrators is not something that I have seen a lot beyond perhaps the example of the openly licensed picture book platform Storyweaver (https://storyweaver.org.in/), where illustrations can be selected from various illustrators who have made their work available on the platform to write a picture book. I flirted with the idea of creating a collaborative picture book. I decided to share the story and idea with two colleagues Ben Greenhalgh and Louise Batchelor from the Manchester School of Art and see what they thought and whether they would be interested in doing this together, with some of their students. They liked the idea and accepted my invitation and offer their perspectives below.

Ben Greenhalgh: *The Invisible King project provided an exciting, unique experience for academic staff at the University and students to collaborate on a professional 'live' brief that had the added incentive of being for charity. It would offer our talented Foundation Art and Design students an opportunity to showcase their illustrative ability and contribute as a team. I was keen to support and work alongside them, as design lead, in bringing a story surrounding a very current issue, the Covid-19 pandemic, into the form of a completed illustrated children's picture book.*

Louise Batchelor: *I was delighted to be involved in The Invisible King project for two reasons, first it was for charity and second l believed it would be an exciting and challenging 'live' brief for the Foundation Art and Design students to contribute to. I enjoyed the collaboration between author, illustrators and graphic designer. It was a challenge for me working with 11 other people. l was given the responsibility of art editor working closely with 9 students who needed instruction and encouragement throughout, l got a real sense of achievement from the experience seeing the illustrations progress into final artworks for the book.*

I was thrilled when I found out we could go ahead with the project and that students were interested to join us for this adventure and excitement filled me once again. Due to the pandemic and the lockdown our collaboration happened remotely, asynchronously via Facebook Group Messenger and synchronously in a Zoom room with all cameras switched on. This combination helped us get to know each other a little bit and make good progress quickly despite the complexity of the project and its novel approach. I also had the opportunity to see first hand and experience how learning and teaching looked like in this class and how students were supported. I was amazed by the care both colleagues showed to the students and how they helped them boost their confidence while also helping them to develop their illustration skills and bring the best out of them.

It is hard to do something like this with one other person. On the Invisible King project we worked with 9 illustration students and one 5-year old girl. What follows are some thoughts linked to how we approached the making of this collaborative picture book during the pandemic and how we worked together remotely using networked technologies. There was no other way.

First of all students were invited to provide sketches of the main character, the Invisible King and a particular scene. This helped me see the different illustration styles but also identify a visualisation of the king that I could relate to most. All king sketches had potential but one spoke to me particularly. It was almost as if this student knew what I had in mind. From these sketches we quickly agreed who would work on the king character. The draft scenes also helped us identify students for individual scenes. As I had visualised all the scenes in my head and on the tablet, we shared my ideas in a Zoom meeting and assigned the scenes based on the preliminary sketches and detailed feedback we provided to all students.

A framework to aid reflection

Harris'[7] framework about creative methods provide a useful guide to reflect on the different ways that were used to create this book and particularly the illustrations.

- Evolution: new ideas from existing ideas
- Synthesis: combination of existing ideas
- Revolution: brand new ideas
- Re-application: existing ideas in new light
- Changing direction: new path when the old doesn't work

Below, we add some thoughts linked to the creative process relating to two specific scenes that show how we have brought together our individual imaginations in different ways based on the above framework. On the left hand side of Figure 1 is the scene as I, the writer, imagined originally and on the right hand side the final illustration that has been used in the book.

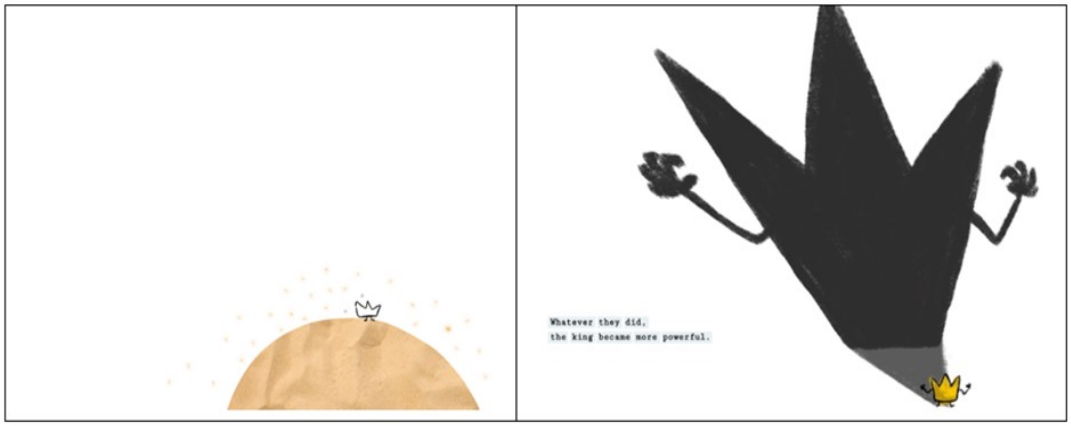
Figure 1 Example scene from the picture book - left my sketchy idea, right the illustration produced by all the students

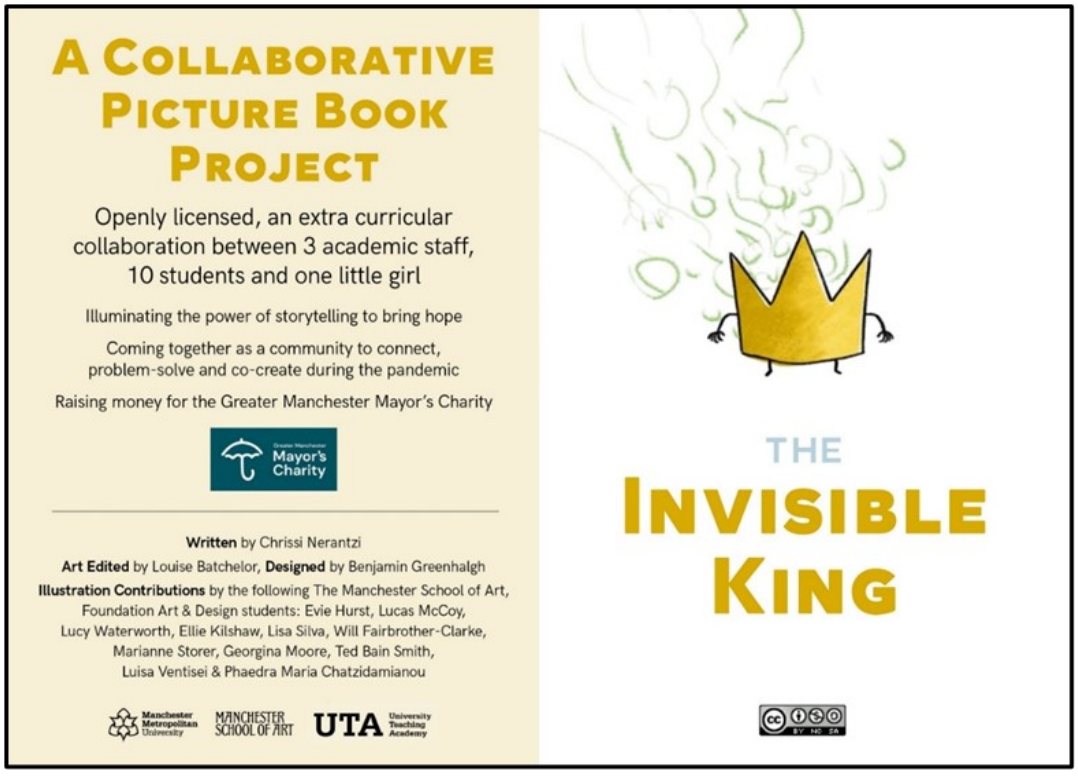
Evolution: Figure 1 shows a scene to illustrate that everybody was running away from the invisible king. I could see it in front of my eyes, I connected vividly with this mental image that I drew on the tablet. My idea was that one illustrator would be assigned this scene. It didn't happen this way. The idea about making it a truly collaborative scene came from a discussion we had with the students and a suggestion that was made by Louise. She saw an opportunity to unite all students on this picture and it was such a wonderful idea. As a result of her suggestion, all students contributed to this particular scene and brought their diverse styles

into this illustration. Not only did we use illustrations from all students, they also brought in diversity and therefore made it a truly inclusive one. I really like how my colleagues and students embraced the original basic visualisation and enriched it in such an imaginative way. For me the final output but also the creative process represents an evolution 7 where a new idea was formed based on an existing one.

Revolution: Figure 2 shows an example of departure from the original visualisation. The student illustrator who was assigned this scene took the initiative to design something very different based on their own imagination and the key message of this scene, which was that the king became more and more powerful. Comparing the two it is clear that my imagination linked to the visualisation of this scene was weak. I was the first to admit it and I embraced what I saw. It is that letting go, and being open to something that is different and potentially better that is important, I felt. And acknowledging the strength of the imagination for others and how it can alter our own potentially too. The illustrator's vision really shows how they connected with the story and created a strong image in a very different way, something that I didn't have in mind at all. I am so pleased this student had the creative confidence and used their imagination to put forward a very different scene, that is much more powerful and effective than my idea. They ditched the original idea and coming up with a brand new one bringing about a revolution.[7]

Figure 2 shows an example of departure from the original visualization (left) and final illustration (right)





A survey shared with students who participated in this project provided useful insights. For the students while it was a new experience and they seemed to enjoy working with others for a good cause, they also found it challenging to follow a brief. Some mentioned particularly the difficulty of using the writer's visualisations and translating them into images. Others felt that they should ask more questions to better understand the brief and requirements. All responses show that students felt that it was a worthwhile activity and that they have learnt something about themselves as an illustrator.

What we learnt

Chrissi: The journey of putting the book together was an adventure. I learnt so much. I don't know if anybody else has attempted to create a picture book with so many collaborators working exclusively remotely in very challenging times. A picture book is usually the work of a writer and an illustrator or a writer illustrator and they work on a book over a much longer period of time. We did it intensively over a few weeks. I feel that the book brought different styles and ideas together in imaginative ways. But that is not all. It also gave me valuable insights into how two of my colleagues, Ben and Louise, work with their students during very challenging times. Their commitment to and care for their students is exemplary! And that was a really useful insight to gain from the experience as an academic developer: knowledge I can use in my role as the faculty link.

Ben Greenhalgh: It was initially difficult to envision how a collaboration of this size, including 10 students with varying creative styles, an author, art director and designer, would come together. However, the students were dedicated, committed and imaginative in answering the brief – it was fabulous to see the initial story evolve from written form to initial sketches to beautiful finished illustrations. It was a pleasure to be able to bring all the visual and written elements together in to a designed, formatted and illustrated children's picture book – communication and a clear vision was key in enabling this to happen.

What I found most impressive, was that the students were able to engage with and complete the project under extraordinary circumstances, at the end of a very long, demanding academic year. Although the situation wasn't ideal with all involved being fairly new to remote working, I felt that the final illustrated children's picture book came together incredibly well. All collaborators involved should be proud of the accomplishments, in particular considering the tight timeframe to work with!

Louise Batchelor: I feel very proud of my students, at a particularly strange and stressful time in their lives they chose to engage with this extra-curriculum project. I really enjoyed the creative decision making and seeing the book evolve from the original idea into a lovely, gentle illustrated children's story book that deals with this unprecedented difficult time in history. Sometimes it was frustrating not being able to sit down with the students and physically sketch out what was needed in a language we are more used to using! Distance learning can be difficult but it was a learning curve which I can now take forward!

If you would you like to read The Invisible King, you can access it at https://zenodo.org/record/3924437#.Xvzb1ihKg2x
Through the book we would like to raise money for the Greater Manchester Mayor's Charity at https://www.justgiving.com/mayorofgreatermanchesterscharity to support the most vulnerable during this pandemic. Be generous if you can. Thank you.

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Lifelong - Lifewide Imagination: how child-hood play informed my teaching practice
Johanna Payton

Johanna is a freelance journalist and a lecturer in journalism at City, University of London. She consults, writes and edits for national newspapers, magazines and websites, broadcasts on the radio, trains fellow media professionals and lectures in fashion journalism, styling and blogging. She is also co-editor of Creative Academic Magazine.

Tapping into my childhood imagination has inspired my university teaching

Imagination can be a cruel mistress. Today, it ignites and informs my work as a university lecturer in journalism. But when I started teaching, it had the habit of making me doubt my choices. Starting out as a lecturer, I'd catch my mind wandering – and wondering - if teaching was what I really wanted to do with my life.

I 'fell into' university lecturing after a successful career as a freelance fashion and lifestyle journalist. Then, I'd tapped into my imagination on a daily basis, whether for ideas that might spark articles, or brainstorming ever-more ambitious campaigns with my colleagues at the Guardian, where I worked on creative brand partnerships.

I imagined stories, scripts and concepts that made it to fruition in the pages of magazines, or online. My imagination was alive and kicking, fuelling my journalistic work.

My fashion & lifestyle journalism offered endless opportunities to be creative and use my imagination

When I first entered a university classroom, the structures, assessment procedures and traditional classroom dynamics made me feel that my imagination would become redundant.
I'd been invited in as a visiting lecturer on account of my fashion journalism experience, but in the sterile 'learning room' environment, I couldn't imagine how any of the rich and colourful experiences I'd had in my career could come to life, or even be reflected.

I'd always wanted a 'creative' career: to be a writer, to tell stories. Why was I suddenly stood in a windowless, bare-walled room with a bunch of befuddled-looking 20-somethings?

Right - Winnie the Pooh, out on a field trip with my dad and me

But there was more.

I remembered that, even as a child, I wasn't satisfied with this largely passive arrangement. I reached back into my memories, into the archive of my imagination, to find out how I brought my 'classroom' to life.

In my adult imagination, I communicated with six-year-old me. What would *she* say to her future self about the joy of teaching if she could? Why did her fantasy classroom give her the greatest imaginative pleasure?

In a letter she replied:

Teaching the teddies isn't just about telling them what to do. I like to sit with them, cross-legged on the carpet, using my imagination to 'listen' to them and imagine what games they'd like to play, which lessons they'd like to learn and how they'd love to play with each other.

I care about the teddies. I want them to have a great time, so I use my imagination to reach for the most exciting activities: teaching Humpty Dumpty how to swim; styling Big Cat and Little Cat in matching outfits and showing them how to strut down the catwalk; coaching Care Bear in cooking and crafting before he marries Sindy doll (they were made for each other). I imagine what the teddies are thinking and feeling and I try to do the things they will enjoy the most.

In my imagination, there are no boundaries, and if I take my teddies there, I can be the best teacher regardless of where we are or how much money we have.

Left - Womble was always an excellent student (even in the bath)

To take my teddies into my imagination with me, we have to trust each other. It must be safe in my classroom game: my teddies need to know that I'm not going to suddenly turn an art class into a science class and start dissecting them! I want them to know that I'm in charge, but I'm here to look after them and guide them. I really want them to learn, because I care about them.

In the real world, I care for my teddies, from taking them out of the cupboard to carefully packing them away later; in my imagination, I want my toys to grow up to be wonderful, well-rounded dolls and bears who will look back on our make-believe school with fond memories and big brains!

When you can make your students happy, and take them into your imagination with you, teaching is the most fun you can possibly have.

My cat, Horton, was not the most enthusiastic member of my fantasy class

By using my imagination to communicate with my past self, I'd stumbled upon something of a revelation. I could see that my six-year-old imagination was paving the way for the type of teacher I wanted to become, 40 years later. Understanding how my imagination had inspired passion, care and creativity within my role-play, set me on a path to exploring transformative, student-led approaches to teaching – and it also helped me realise that teaching wasn't just something I'd fallen into. I was actually fulfilling a childhood ambition.

All those imagination-rich playtimes in my room – being an only child they were frequent! – had prepared me for my career. My active imagination had helped me develop the storytelling skills I needed for a career as a journalist, and my favourite imaginative game was directing me towards education, clearly signposting the type of teacher I wanted to be.

My childhood imaginative play showed me that the 'classroom' or 'space for learning' could be anything I wanted it to be. I'd imagined my teddy bears' thoughts and feelings, and valued their 'trust'; but if I used my imagination now, as an adult and a 'real' teacher, I could find ways to building a pedagogy of trust[1] with my students, encouraging them to share their hopes and dreams providing them with a path to transformative experiences in the learning environment.

And that's how my teaching evolved. I channelled the imaginative experiences of my formative years to inspire my student-centred teaching[2]. I designed a module on fashion styling and planned practical 'dressing up' tasks, street style activities and assessed fashion shoots; I introduced a video assessment to a fashion journalism course where students would present their films by transforming the classroom into elaborate stages for their work; I played games with the students, inspiring trust and creating an atmosphere that put their imaginations to work.

Welcome to my classroom, fuelled by imagination

Together with my students, we broke out of that sterile classroom environment with the simplest tools (colouring in sheets, Lego, toy jewellery making kits, old clothes to dress up in, chopped up magazines for collaging) and heaps of shared imagination. Sessions became fun and more challenging – for my students and myself – as I devised activities that provided the fun and freedom for the students to take risks and explore their own journalism-related fantasies.

In my own practice, I consciously and constantly cast my mind back to those imaginative playtimes as a child. They have helped me to value my teaching more, to recognise that I had a very early 'calling' to this profession, expressed through imagination. This helped me to see that teaching *is* what I'm meant to be doing.

As a higher education teacher I value the work of my imagination – I could not be the teacher I want to be without it. While it might play cruel little tricks on me at times, suggesting notions of dissatisfaction or frustration (as teachers, we all feel it sometimes), it also gives me the courage to teach in my own way, to push some of the boundaries I see in higher education in the context of my own classroom, and to inspire change and transformation in my students. Above all I can now see that the essential work of my imagination is to catalyse and inspire the imaginations of my students so that we work together as a powerful and creative network of imaginations. There can be no greater gift or experience as a teacher.

Me in the Hall of Mirrors, Palace of Versailles, March 2020, taken by one of my students during a field trip to Paris: my classroom is much bigger today than when I started my career in teaching

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Creative Ed-ventures in Online Teaching & Learning

Editor's invitation to contribute to CAM #18

Johanna Payton and Norman Jackson

"If imagining is 'seeing' new things, creativity is bringing those new things into existence"

One of the consequences of Covid-19 has been to trigger an unprecedented increase in online teaching and learning in higher education across the globe. We may have been forced into this systemic change, but many higher education teachers believe that the change is here to stay: a view that is also widely held by other professionals that support students learning and academic teachers.

Now it's down to 'all of us' involved in teaching and supporting students' learning, with the help of our educational development and educational technology teams, to adapt and find the most effective ways of facilitating and inspiring learning online and building relationships that encourage learners to imagine and create. Creative Academic would like to support academics/faculty/teachers who are making this profound change by bringing together a curated collection of shared experiences and practices that seek to engage teachers and learners in using and developing their imaginations and creativity in a digital space.

We invite expressions of interest from higher education practitioners and students who would like to contribute to our curated collection of educational adventurous practices in one of three possible ways:

1. **a 1,200-1,500 word article**
2. **a short video (5 mins max) to share their creative on-line experiences,**
3. **an image that captures your online creativity (with explanatory notes)**

We have identified a number of overlapping themes that we might explore but we encourage you to explore other ideas if these do not connect to your practices and experiences.

Creative connections & relationships: the benefits of synchronous teaching, using our creative selves in a digital context, expressing 'digital care', fostering trust and growing identities (sometimes new identities). We are interested in how imagination creativity enable and facilitate engagement and the formation of powerful and productive learning relationships, cooperative cultures and ecologies for learning.

The tech challenge: some (perhaps many) academics/teachers are put-off by the very idea of technology and are worried about teaching online - this could be a barrier to creativity. We are interested in discovering what the barriers are to using technologies for both staff and students, and how such barriers have been overcome. We are also interested in finding out which technologies are easy to use and are shown to encourage imaginative and creative engagement.

Inspiring creative experiences: personal narratives can be very powerful and we're interested in the stories of both teachers and learners that share engaging and inspiring experiences of teaching creatively and being creative using online technologies.

Playfulness: we know that play is a powerful force for engaging people through on-line media. What experiences have you had as a teacher or learner that might encourage others to invent their own playful experiences?

If you would like to join our collaborative adventure please share your ideas with Johanna - Johanna.Payton@city.ac.uk **or Norman** lifewider1@gmail.com

A Day in the Life of My Imagination: What if higher education paid more attention to imagination?

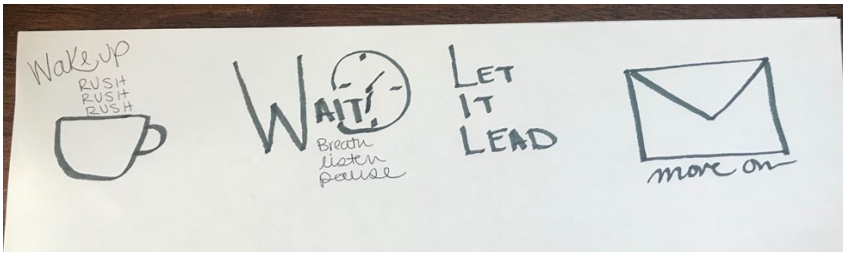
Cindy Cogswell

Cindy is the Director of Strategic Planning and Assessment at Ohio University. Cindy has delivered over 40 peer reviewed sessions in four countries. Through her work and research, she aims to enrich the dialogue about student learning, engagement, and institutional change in higher education.

Carve it out. Else it leaks. Or, spills over in the wrong places. Not that there is a wrong place but there is a wrong time. And worse, a missed inspiration.

"Misapplied creativity creates disasters." Attribution unknown

A typical day in the life of my imagination



I need it more than ever with all of this quarantine business. I wake up, I sneak downstairs. Make coffee. Grab my notebook, colourful pens, and wait. I clear my mind with prayer and meditation.

Sometimes I look at my list of writing projects, picking up one where I last left it (some needily claim they've been abandoned but I disagree). Sometimes, I pick up a new, crisp google doc and just go. Other times I let the pen lead. I must have a good song. One that takes me where I'm going. One that's been where I've been. One that rings deeply-- oh yes, it must be on repeat.

After enough time letting it get some ink (or digital ink), I must set it aside. I am an administrator after all. Glimpses float in throughout some days-- I scribble them down. Occasionally stealing away with them midday like a lover.

The days slip on and time passes. I wonder if my imaginative yearnings to play, to redesign, to become the places we all profess to be will wear me down. I don't want to burn out and I think if almost, sometimes, it comes from but a fear that my imagination and creativity are my antidote to routine administrative life. I also need them to cope with particular challenges I encounter in my life as an administrator. I mean, my imagination does come in when I do my "work". From whence else am I pulling to be better, to do better, to be the place our students need for the future? Is it not a relentless striving to be that truest university?

When my work is challenging, it is through the framework of creativity that I hope for solutions. How do you build a robust system of assessment from scratch? How do you measure growth with no parameters, no baseline, and no framework? How do you bring vastly different scholarly works, worlds, and approaches into the same solution? The problems present the raw materials to work with and through imagination I fill in the gaps. Or it leads to the next step. And that is really all you need. One step forward. Oh, and a deadline. Deadlines sometimes add just enough pressure needed to bring solutions forward.

Perhaps because I compartmentalize at which ends of the continuum I call it creative. When I'm writing, when I'm free-writing, when there's a deadline. When I chose it. When I sing it or dance it. The spaces where I'm doing what is uniquely an expression of myself or my imagination are perhaps the extents of the continuum I've imagined to be what is and what is not creative. I am a creative person but even in stating that I must exercise caution so as to not mislead you into believing that you are not a creative person. Creativity is not a fixed attribute[1]. It is a state of mind rich in imagination and possibility. An exercise of habit and to that end, it is something I purposefully cultivate, work on, and make space for in my life. So, what if our institution's of higher education tried to do the same? What if they set out to cultivate, value and draw upon the imaginations of all the people who make the institution what it is?

Figure 1 If you can't imagine anything how can you learn? Illustration by Sophie Wolfson

Using imagination involves questions like WHAT IF? So what if we paid more attention to imagination in higher education, how would our institutions, operations, faculty, students, administrators, and our graduates be different?

Institutions WHAT IF? What if institutions were truly different from one another again? What if they not only advanced knowledge in the disciplines but also advanced it in their communities? What if they solved local problems, bridging gaps and collaborating between experts and local stakeholders? What if homecoming celebrations and campus awards ceremonies made room to talk about imagination, recognized creativity, and drew attention to remarkable problem solving and use of resources? What if instead of talking about scores on exams as evidence of student subject mastery, we also talked about gains profiles and aptitude to demonstrate imaginative skill? And students' comfort in doing so by time of graduation?

Operations WHAT IF? instead of academic silos, where departments house only those faculty who have the same degree, were fused to be collaboratively oriented? So that offices were clustered across disciplines, ways of knowing, and what is known? What accidental ideas might bump into each other in the hallways? What would happen in such a milieu if imaginations collided?

Faculty WHAT IF? The definition of faculty research wasn't at odds with the definition of good teaching? What if tenure criteria recognized or explicitly rewarded imaginative collaborations across disciplinary fields? What if faculty were encouraged to reveal how their imaginations had played their part in their discoveries and insights? What if the products of their imaginations – their research was presented and celebrated on campus and in the local community? What if, in their teaching, faculty talked openly about the ways in which scholars and practitioners in their field had used their imaginations, and if they revealed to learners how they had used their imaginations in their teaching? And, if faculty not only shared their imaginative process but invited students into the journey—helping the students to see the steps in the process as steps and not failures.

Students WHAT IF? students were encouraged to understand and value how their imaginations worked in concert with other cognitive and emotional processes? What if, through the pedagogical, curricular and assessment practices they were encouraged to use and develop their imaginations knowing that this would be valued? What if they could bring the learning and insights they have gained through their own life experiences into their general education? What if in addition to student research presentation days we also had student imagination days, where students present their best imaginative work to peers on campus? What if admissions criteria welcomed more diverse previous experiences towards considering their fit on campus? What if we were not afraid to tap into the imaginations of our students to find better ways to help them learn and achieve?

Administrators WHAT IF? they could agree upon a shared bigger picture of the meaning of learning and education and then create the most fun, imaginative pathways to get there, and tackle the one that best moves everything towards that goal? Would less meetings enhance their productivity? What if we invited students, faculty, and community members into our goal setting to imagine the next phase of campus priorities and dream how it could be different in the not-so-distant future?

Graduates WHAT IF? graduates from our educational institutions left having explicitly developed the skills and imagination necessary to move with confidence beyond education into the uncertain and turbulent white water world[2]? What if they had learned to be independent, self-directing, imaginative, creative and reflective learners, who have played with ideas from across the institution and told us how to operate differently, better, and more collaboratively?

How would you truly, reimagine an institution so that it paid more attention to imagination? Would you prefer to work in an environment that does not value imagination or would you prefer to work somewhere where you too can pick up a hammer and some glue and help to deconstruct/reconstruct what it means to be a university that celebrates imagination?

I think some people buy into the idea of university because of its prestige, its first mission to preserve and advance knowledge. But if that is why you've bought in, I must push back to argue that at this level many look past the purposes of these aims: to advance the world to make the world a better place. To move past these structures of knowing and being and operating in order to arrive at something new that makes all of everything better. To grapple with life's deepest, hardest truths. To uncover cures, to help individuals realize their potential. I know of no way of doing this without imagination. Einstein said that we cannot solve today's problems with yesterday's solutions. We must imagine. We must expand and we must build new what we have not needed prior to this moment in the existence of mankind.

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Image credit

Sophie Wolfson https://www.theguardian.com/education/2016/jun/04/aphantasia-no-visual-imagination-impact-learning

Editor: *No curated collection of resources on imagination in education would be complete without reference to this small but important book written by Douglas Thomas and John Seely Brown and published in 2011. This edited extract from an article in Forum Futures 2012 p54-60 contains some of the essential learning points. Forum Futures 2012 is a compilation of summaries of the papers presented and discussed at the Forum's 2011 Aspen Symposium. Available at http://forum.mit.edu/publications/forum-futures-2012/*

Cultivating the Imagination in a World of Constant Change: A New Culture of Learning
Douglas Thomas

Douglas Thomas is a Professor at the USC Annenberg School of Communication and Journalism and the USC Iovine and Young Academy for Arts, Technology and the Business of Innovation. Over the past two decades his research has focused on the intersection of technology and culture. He is the author and editor of multiple books covering computer hackers, cybercrime, computer viruses, the culture of video games and the digital revolution in education. In 2006, he founded the journal *Games & Culture*, the first academic journal to study the culture of video games, and the following year, he organized a major video game conference in Tokyo, helping launch the new field of Game Studies. Since that time, he has focused on the relationship between games and learning, leading to a long-standing collaboration with John Seely Brown. Their combined efforts led to their concept of the "gamer disposition" being named one of *Harvard Business Review*'s "Breakthrough Ideas" and to the publication of their book *A New Culture of Learning* in 2011, which has been translated into multiple languages and is now being read worldwide.

In Cultivating the Imagination, John and I have tried to shift the conversation away from schools as teaching machines that are all about efficiency of transfer to a focus on learning environments. It's not that our schools are broken—it's that our current theory of learning isn't working. Environments don't break. They can be toxic, healthy, unhealthy, flourishing, and so on. They aren't efficient things that fail, they just change shape and remorph. The problem we're seeing is that transfer starts to break down when the world starts changing faster than the transfer can keep up. If you're in a business and every six months you need to bring people back to retrain them because things have changed in the workplace, that's a losing game. It's not just the content that's changing all the time, but the context is shifting too. As good educators, we believe we have the solution, which is that we will teach meta-skills. We all like to think that what we teach isn't facts, but rather, how to learn. And that works if content is shifting because you teach people how to go find new content. But when context is shifting as fast as the content, meta-skills don't help very much either.

So we started looking at a theory of inquiry, which one could argue goes all the way back to the Socratic method. But more on point for John and I, it went back to the work of John Dewey. [What] we found was that many of Dewey's ideas were essentially right, but well before their time. One of his major problems with technology was that he thought we could never have a community technology— but he was referring to telephones. Well, obviously we've kind of solved that problem; we have all sorts of technology-based communities. We started to think about how to reinvent Dewey. How do we take the idea of productive inquiry and use the world of constant change and the Net to make sense of it? We realized that questions are incredibly important, that they tend to be more important than their answers. Answers give us impetus to ask better and better questions, and in fact are key to starting to cultivate the imagination. Imagination is a topic that deserves a lot more attention than it gets. I can ask, how many of you are against imagination, and of course it's funny. But if I ask how many of you can give me a precise definition of what it is, that's more complicated.

John and I came up with the idea of a new culture of learning based around the notion of imagination. We argue that the old model of learning has become unsustainable, or if it hasn't yet, it's going to be sometime in the relatively near future. Unfortunately, it's also the core of what we do. I'm as guilty of this as anybody. I stand up and lecture to my students. It's a model that's very comfortable and well understood, and it's been used for a long, long time. But the problem we face is that the approach is fundamentally disconnected from how students learn today. If we think about the role of the university as being in large part to improve how our students go out in the world and behave as democratic citizens, then the fact that we're

teaching them in a context that has decreasing relevance to the way they learn is a problem. It rings more and more hollow to students, and it becomes more and more difficult to influence them. Our idea of inquiry and question-based models is not new. But the environments we can create in order to make them work are. Much of what we talk about is the idea of following one's passions. Now, following one's passions without structure and discipline, as you know, is a recipe for disaster. We're not saying bring in freshmen and tell them to study whatever they want. Instead, we've come up with the concept of a bounded learning environment. We regard cultures not as anthropologists do but, rather, consider cultures as petri dishes. A petri dish has two qualities that are important. The first is that it's bounded. Nothing from the outside can get in. It's a glass shell, but within that glass shell, the other important quality is that anything can happen. It has to be completely unrestricted and free. You put your nutrient in the medium and stand back and let it grow. You've got the boundary so it doesn't grow outside. It's all very controlled. A culture of learning can look a lot like that. It's that play between constraint and freedom, institution and agency, that we talk about in the book, that's so powerful as a way to create learning. That brings us to imagination.

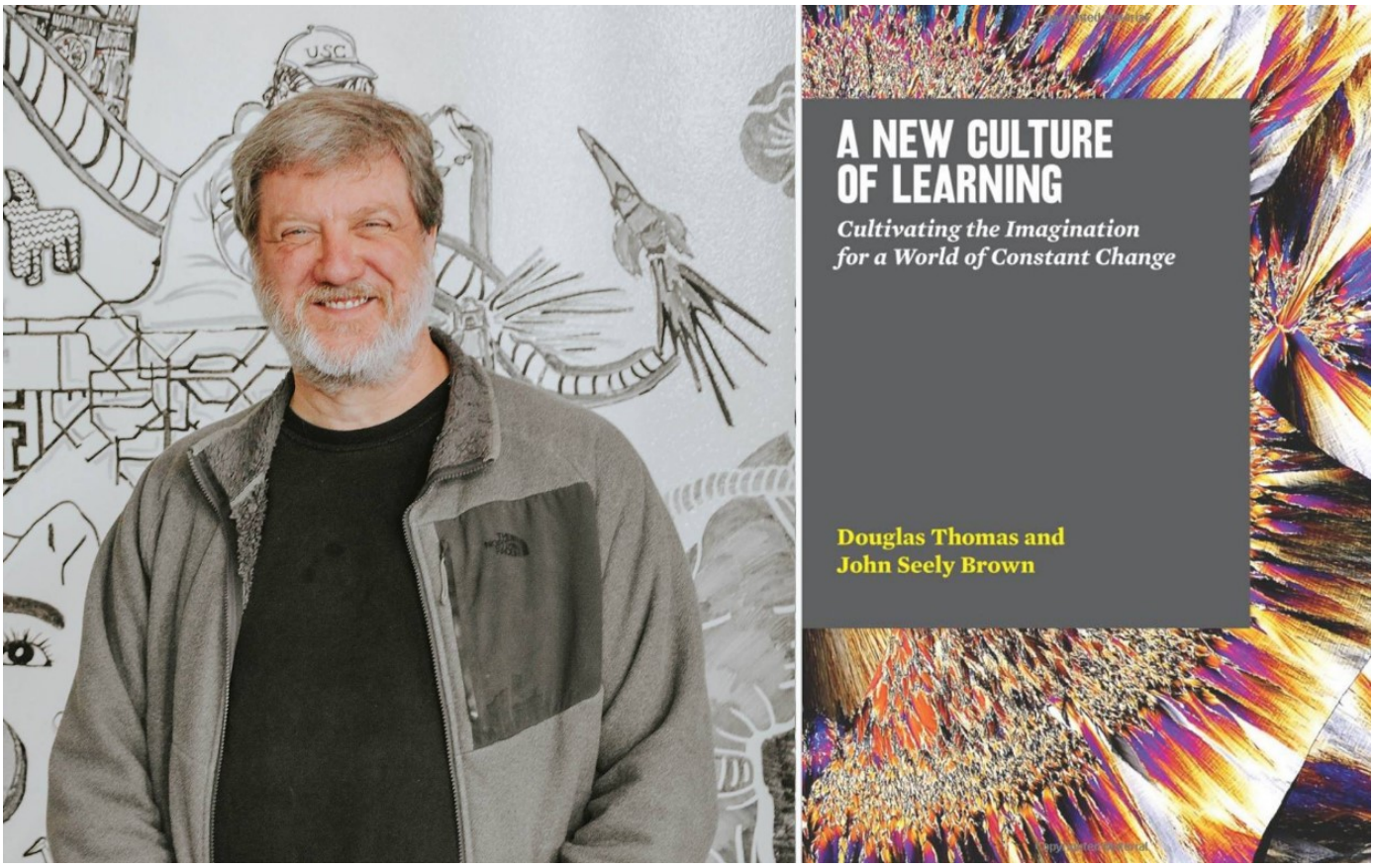
Imagination is not something that you teach. You don't say, "Johnny, from 3:30 to 4:30 you will be more imaginative." It doesn't work that way. But we can create environments in which that can happen. A concept we found that works well is the idea of world building. It's not about memorizing things, and it's not about repeating things. It's about the ability of the mind to build a world. The two words that we've come up with as the keys to imagination are "what" and "if." ……..

Our theory entails just a very simple shift in thinking. When you invert questions above answers, it's an easy thing to do in the classroom. It doesn't require a provost to pay more money. We don't need new buildings. We don't need new teachers. We don't need new classrooms. We don't need any of that. The infrastructure's already there. Prioritizing imagination, passion, inquiry and questioning is a relatively easy thing to do. In the class I mentioned that I taught last semester, New Cultures of Technology, I did that by looking at two different "what-ifs." One was the history of technology and the cultures around it, and the other was the history of science fiction. Both are histories of what-ifs: one looks backwards, one looks forward. What were the "what-ifs" that were asked in order to invent the telephone, the telegraph, the Internet, and so on? The other "what if" is the beauty of opening a book and reading the first page and realizing you're someplace that you've never heard of or seen before, and being willing to ask things like, what if there were telepaths? What if there was an intelligent machine? What if we were all robots that could download each other's consciousness? We can build and participate in the exercise of world-building with an author. The class looked at the idea of imagination from those two perspectives. It turned out to be quite interesting.

The other exercise I did with this class that worked really well is something I call "flipping the quiz." They had just read a book by Philip Dick called Do Androids Dream of Electric Sheep? which is what the movie Blade Runner is based on, and I gave them a quiz. I asked, if you wanted to know whether or not someone read this book and truly understood it, what would you ask? The next three hours they argued with each other about what was the best question, and they had to defend their ideas. I sat back. It was wonderful. They were very invested in the answer to that question, and why it was that asking that question mattered. The exercise was a great example of putting the question first and letting it play out and getting out of the students' way.

Another key idea that John and I write about is that there are traditionally two places where learning has happened: communities and collectives. Communities tend to be institution-based. In fact, when we create learning communities, we do so by investing in institutions. Now, what we see emerging with new technology is the formation of what we've been calling collectives. Collectives work quite differently than communities. They have an institutional base, usually some sort of platform, but they afford individual agency. Institutions tend to take a long time to create, and require a very deep investment. They also create infrastructures that become self-sustaining over long periods of time. Think about a university— brick-and-mortar buildings, and so on. Collectives, on the other hand, are superfast. They have enough shared investment for people to find each other. They're peer-based, there is no authority structure, and the infrastructure is completely content-agnostic. A collective doesn't care what you're talking about and it's easily abandoned……

Conclusion : So what does this mean for the classroom? I'm coming to believe, quite deeply, that our students have become wired to learn differently. If the goal of education is a well-informed citizenry, I think we're training them out of the necessary skills they need in order to make sense of the world around them. In fact, we're giving them exactly the opposite message in the classrooms today. Our classrooms need to catch up with the world around our students. As I said earlier, it's not hard to put the ideas from our book into practice. It takes just a slight shift in the way we order our priorities. By putting questions first, we invigorate and cultivate students' imaginations. By doing so within the classroom as a bounded learning environment, we have a chance to reform what we're doing in the classroom so that it looks a lot more like what's happening in our students daily lives and their everyday world, and is therefore more relevant, meaningful and effective.



“Enactive” Imagination – the creative force for our ecologies of action and learning

Norman Jackson

Norman is Emeritus Professor of Higher Education at the University of Surrey and Founder and Director of Lifewide Education and Creative Academic

Two perspectives on (pragmatic) imagination

I use the opportunity of our magazine explorations to try to try to inch forward my own understandings of lifewide learning, which generally means trying to connect with and integrate ideas and concerns that have been raised by contributors and to my own reading as I have tried to engage with the subject.

In my earlier contribution to the magazine[1] I sketched out some of my imaginings during a fairly typical day in my life. I concluded that I used my imagination to help me get out of bed in the morning by visualising how I might engage with and change my world, myself and my family. I used my imagined thoughts as a motivator and a guide for possible actions that in one way or another led to the production of this article and this magazine. In the same day I also had occasion to use my imagination to play (in an intellectual sense) with an idea offered in an online presentation I was watching. In this article I want to explore a little the idea of enactive imagination that is deeply connected to embodied action.

Through the experiences I had on the day I chose to think about, I can see direct connections between imagined thoughts and subsequent actions – sometimes these were closely related in time, for example imaging what a tree would look like before I cut a significant branch, sometimes they were more distantly related. In some of these imaginings I seemed to directly engage myself in acting in my world – for example doing particular things in and to my garden. On the other hand some imaginings stimulated thoughts that brought about small changes in my understanding. In the first example the work of my imagination involved enaction in a world with which I was familiar while the second example of using my imagination involved representation and the manipulation of ideas (seeing patterns in information and ideas to reach a sort of synthesis - a novel configuration of ideas - that provided me with questions for further inquiry). Both of these ways are embraced within the model of pragmatic imagination[2,3] (see Figure 1) but in this article I want to focus on the enactivist concept of imagination and try to connect this perspective to the ecological model of learning I am developing.

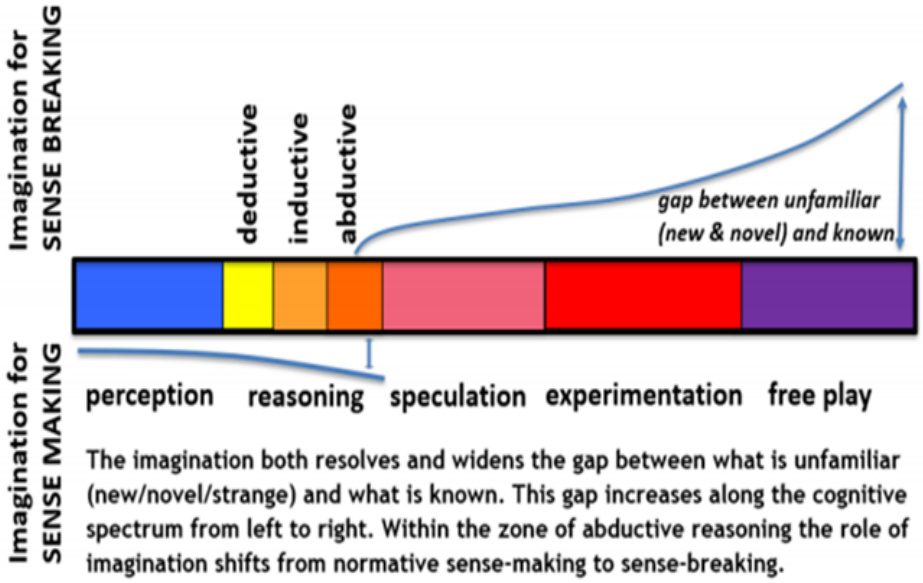


Figure 1 The concept of pragmatic imagination shown in relation to the cognitive spectrum [2,3]. It is the productive entanglement of cognitive and psychological processes – perception, reasoning, imagination, beliefs, values and emotions, that enables us to respond in our unique ways to our unique circumstances through the creation of mental images and models about things that a) only exist in our thoughts (representational imagination) b) are extensions of our embodied selves into our external world (enacted imagination).

The imagination both resolves and widens the gap between what is unfamiliar (new/novel/strange) and what is known. This gap increases along the cognitive spectrum from left to right. Within the zone of abductive reasoning the role of imagination shifts from normative sense-making to sense-breaking.

An enactivist perspective on the work of imagination

My experience on imagining myself doing things in my garden and about to do things while acting in my garden[1] points me towards an *enactivist* view of cognition which argues that cognition arises through a dynamic interaction between an acting organism and its environment[4] and that our environment is one which we selectively create through our interactions[5]. "Organisms do not passively receive information from their environments, which they then translate into internal representations. Natural cognitive systems...participate in the generation of meaning ...engaging in transformational and not merely informational interactions: *they enact a world*."[6,7]

An enactive view of imagination is explored by Wittgenstein[8] and neatly synthesised in an essay by Jose Medina,[9] "the enactivist proposal ….. is that we should understand the imagination as an enactment or re-enactment of experience in this sense, that is, as an embodied and interactive exploration of the world."[9] Our enacted imaginings enable us to extend our mind and bodies into the world and feel what a particular experience might be like.

"Imaginings are embodied experiences in their own right, which expand the repertoire of patterns of interaction that we are capable of……. it is because the imagination is more than the mere intellectual contemplation of images or representations, because it involves an embodied exploratory activity, that we can make sense of the experiential "feel" of our imaginings and the strong emotional elements that they can contain. As Hutto puts it: The only way to understand 'what-it-is-like' to have an experience is to actually undergo it or re-imagine undergoing it."[9 p320]

In the 'a day in the life of my imagination' narrative[1], I described how I used my imagination to 'see' the affordance provided by the half-dead conifers along my drive and to imagine myself in an embodied way, using particular tools to cut the conifers and form new, more aesthetically pleasing shapes. Through this act I was extending myself into my environment – an environment I wanted to change and became motivated to act through the emotions that were generated by the imagined effects of my doing. Later as I worked in the garden and as I cut the branches I was conscious that I was picturing in my mind how it would look after I had taken the branch away: I was performing a mental simulation of a future possibility, but a simulation that was grounded in the immediate perceptions I was gaining from being present in my environment engaged in the work of transforming the materials in that space.

Connecting to an ecological perspective on the work of imagination

An ecological view of learning with its embodied and situated view of cognition and learning is entirely consistent with an enactive view of cognition and of the work of an enactive imagination within this perspective. Figure 2 offers an ecological perspective on learning and practice[10.11]: it relates a whole thinking, feeling, acting, caring person to their contexts, their needs, desires and purposes, and what they are trying to achieve in the particular situations in which they are acting and learning.

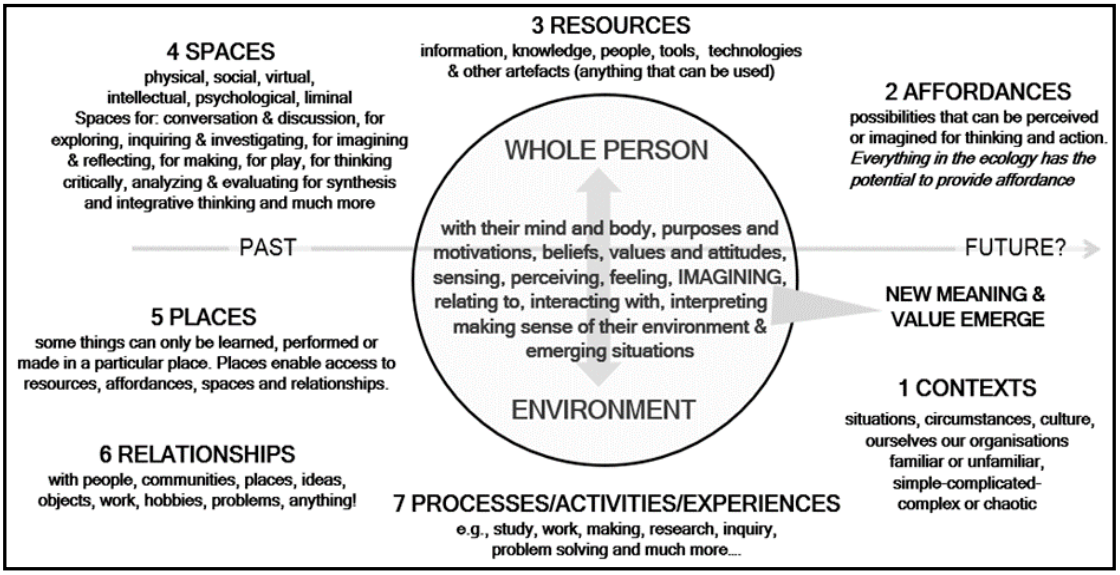


Figure 2 An ecology for action/enaction (thinking and doing, learning and practice) within which imagination is embedded and shapes[11 p86]. Labels (1-7) explain the key dimensions of the ecology.

When someone encounters a new challenge or opportunity, they attempt to comprehend (with their senses, perception and imagination) the situation and act in appropriate and perhaps novel ways. Effectively, they create an ecology that enables them to perceive and interact with their environment in order to accomplish the things that matter to them and learning and achievement emerge from this dynamic. In this way, the person, their environment and their activities are not only connected and related – they are unified.

'Every organism has an environment: the organism shapes its environment and environment shapes the organism. So it helps to think of an indivisible totality of "organism plus environment" - best seen as an ongoing process of growth and development.' [12] p. 20

"When we experience something, we act upon it, we do something with it; then we suffer or undergo the consequences. We do something to the thing and then it does something to us in return"[12 p46]

The concept of pragmatic imagination explains the work of imagination in concert with perception and reason within an ecology of action. The idea of an enactive imagination draws attention to the embodied nature of imagination. An ecology for thinking about possible action (enaction) and then engaging in action (enaction) enables the maker to 'see', through their imaginations, the affordances in their world and to mentally explore the potential in these affordances before any physical action is undertaken. The enactive imagination enables the thinker and maker to connect and integrate different spaces, resources, tools, situations, relationships, activities and themselves in ways that they find meaningful, and effect various transformations (personal, material and virtual). Such an ecology enables the maker to connect and integrate their past, present and future, and connect thoughts and actions experienced in a moment and organise them into more significant meaningful experiences of thinking and action.

The components of an ecology for learning, (summarised in Figure 2) are woven together by the maker in a part deliberate, part opportunistic, act of trying to achieve something and learn in the process. They do not stand in isolation: they can and do connect and interfere and become incorporated into other learning ecologies. An ecology for learning and practice enables the maker to think and act in an ecological (connected, relational and integrated) way, to perceive (observe, sense and comprehend the information flows), and to keep imagining as they interact with their world, what might be and what might be transformed in order to create new meanings, things and situations. Imagination is used to anticipate the consequences of what if scenarios? In my simple example – what will this tree look like if I lop off this branch or if I cut this branch here or there? Such imaginings can only be undertaken during action itself as the imagining has to be grounded in the actual environment in which action is unfolding and the effects of action are emerging.

This article is the material and creative expression from a series of related ecologies for learning and practice. It began with imagined thoughts as I woke up on May 28th 1 and has continued through many thoughts and doings until the day I am writing this (August 10th) and it will I'm sure continue to emerge in different aspects of my life.

So what have my imaginings about being in my garden got to do with learning in higher education?

Well actually it's not about being and doing stuff in my garden it's about being and doing stuff in a more complex world and changing it as a consequence of being and acting in it. All too often, in education, we think of imagination as just a cognitive process - an intellectual effort concerned with forming novel mental images linked to solving academic problems. But, according to the enactivist view of imagination, this is only part of the story. If we are to develop learners with the capabilities to engage and transform their worlds, including their future professional worlds, then we need to enable them to develop their enactive imaginations – imagination that enables them to think about themselves acting and performing in real world situations. In this way they can both rehearse the ecologies they will construct to act effectively and during action they can imagine what they need to do to improve their performances. As the next article in this issue shows, the development of enactive imagination is essential to success at the highest levels of embodied performance.[13]

"Through the imagination, not only as hypothetical reasoning, but as embodied exploration of human realities and human emotions, we can learn a great deal about ourselves, about our moral perspectives, and about how we can interact with each other and with the world from different experiential and agential standpoints. It is for this reason that, when critically cultivated, imaginative practices……..offer us opportunities for improving our sensibilities, becoming accountable to one another in our reactions, and developing new forms of responsiveness. In short, the enactive imagination is a key component in our cognitive, affective, and moral learning." [9p332-33]

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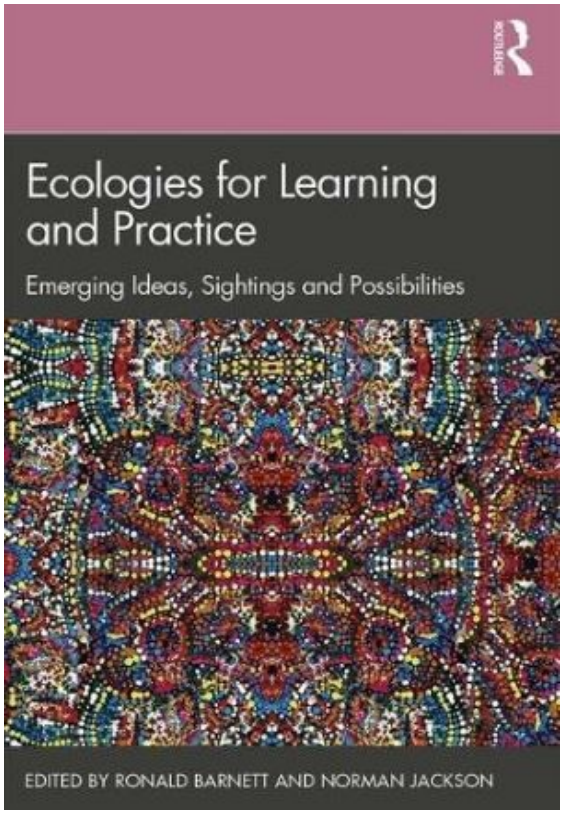


The Role of Enactive Imagination in Mastery: Alex Honnold's Story of Free Soloing El Capitan

Norman Jackson

An example of masterly performance

I am fascinated by people who achieve incredible feats of mental and physical performance in sport, music or any other field in which the body plays an essential part. I also love to hear elite performers talking about the enormous commitment, practical, emotional and cognitive effort that underlies their astonishing achievements. They are the sorts of sustained focused efforts that most of us will never experience, nor I suspect, would voluntarily put ourselves through.

You cannot become a truly great performer, a master of your craft, without a great deal of imagination. Masters in a field of expertise are able to see and define problems and opportunities like no one else can. Sometimes they are the only person in the world who can visualise and work on a particular problem. A characteristic of such expertise is the acute level of self-awareness that masterful practitioners possess which makes them better able to recognise how their imagination is integrated into their practice.

A few weeks ago I watched and listened to professional rock climber Alex Honnold tell the story of how his imagination helped and enabled him to complete one of the most dangerous free solo climbs ever – the 3000' granite wall of El Capitan in California's Yosemite national park. To gain a sense of the life and death challenge he undertook I recommend you watch the Oscar winning film SOLO. In his TED talk, Alex tells the story of how he summited Yosemite's El Capitan, completing one of the most dangerous free solo climbs ever. It provides an insight into the way he used his imagination to master the climb.

Alex: El Cap .. was always in the back of my mind as the obvious crown jewel of solos. It's the most striking wall in the world. Each year, for the next seven years, I'd think, "This is the year that I'm going to solo El Cap." And then I would drive into Yosemite, look up at the wall, and think, "No frickin' way." It's too big and too scary. But eventually I came to accept that I wanted to test myself against El Cap. It represented true mastery……. The thing that makes El Cap so intimidating is the sheer scale of the wall. Most climbers take three to five days to ascend the 3,000 feet of vertical granite….3,000 feet of climbing represents thousands of distinct hand and foot movements, which is a lot to remember.

Many of the moves I knew through sheer repetition. I'd climbed El Cap maybe 50 times over the previous decade with a rope…..my preferred method of rehearsing the moves [is to] rappel down the face with over a thousand feet of rope to spend the day practising. Once I found sequences that felt secure and repeatable, I had to memorize them. I had to make sure that they were so deeply ingrained within me that there was no possibility of error. I didn't want to be wondering if I was going the right way or using the best holds. I needed everything to feel automatic.

Climbing with a rope is a largely physical effort. You just have to be strong enough to hold on and make the movements upward. But **free soloing plays out more in the mind. The physical effort is largely the same. Your body is still climbing the same wall. But staying calm and performing at your best when you know that any mistake could mean death requires a certain kind of mindset. I worked to cultivate that mindset through visualization, which basically just means imagining the entire experience of soloing the wall.**

Partially, that was to help me remember all the holds, but mostly visualization was about feeling the texture of each hold in my hand and imagining the sensation of my leg reaching out and placing my foot just so. I'd imagine it all like a choreographed dance thousands of feet up. As I practised the moves, my visualization turned to the emotional component of a potential solo. Basically, **what if** I got up there and it was too scary? **What if** I was too tired? **What if** I couldn't quite make the kick? I had to consider every possibility while I was safely on the ground, so that when the time came and I was actually making the moves without a rope, there was no room for doubt to creep in. Doubt is the precursor to fear, [an inhibiting use of imagination] and I knew that I couldn't experience my perfect moment if I was afraid. I had to visualize and rehearse enough to remove all doubt.

But beyond that, I also visualized how it would feel if it never seemed doable. **What if**, after so much work, I was afraid to try? **What if** I was wasting my time and I would never feel comfortable in such an exposed position? There were no easy answers, but El Cap meant enough to me that I would put in the work and find out.

Alex Honnold interviewed by TV presenter Jimmy Kimmel[2]

***Jimmy*:** so when you're on that wall and you're climbing, do you ever think about falling?
Alex I think a lot about falling ahead of time. Really. I mean, a big part of visualising is whether or not you're ready to go up and take on that kind of challenge. You have to sort of think through the whole consequences. But once I decide that I'm ready then I'm 100% committed to it and I just go up to it. Falling is pretty standard at the top level when you're pushing yourself. There's maybe an 80-90% failure rate. You have to rehearse your moves. You learn a tough climb in sections: if you don't have your hold right here, if you don't put your foot correctly there, if you don't bend your knee at this bit, then your body's not going to have enough tension and you're going to fall off. So you need a good understanding of your body and an excellent memory for moves.
Left – Alex falling as he practices with a rope. It is only through trying and failing over and over again that he learns how to succeed and to embed the exact sequencing of movements and balances in his embodied memory which he can then re-imagine in his preparations as he attempts the first free solo (image credit 2)

Enactive imagination in the service of mastery and perfect performance

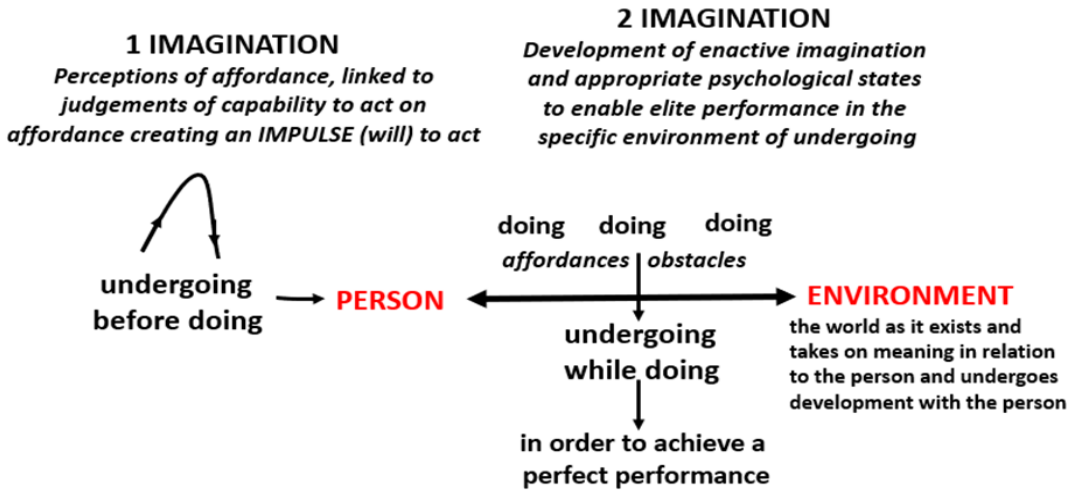
Alex reveals in his testimony his enormous dedication, effort and care to achieving a particular goal that inspired him. He makes it clear that the only way he could achieve a perfect performance is through the physical and mental effort of repeated practise until his understanding and recall of what had to be done was perfectly in tune with his body's ability to execute the moves in the knowledge and certainty that they were the correct moves to make. It is a revelation that he can bring into his consciousness every move, every hold and imagine his body executing the move throughout the whole 3000' 4 hour climb. His visual imaginings of the moves he needed to make and the imagined feelings of making the move successfully are re-enactments of actual experience. But this ability enables him to make the same move in his immediate future and live to tell the tale.

We often think of imagination in the service of creativity but imagination also serves performance and, in the case of an elite athlete such as Alex, perfect performance associated with mastery of technique and the use of a technique in a particularly challenging environment. To try to understand the way imagination works in the context of mastery we might draw on Dewey's interactional model of creativity substituting the idea of masterly performance for creativity. In fact the two are often closely related in the performing arts domain.

Dewey believed that action and [performance] are brought together through human experience, defined precisely by the interaction between a person and their environment: *"When we experience something, we act upon it, we do something with it; then we suffer or undergo the consequences. We do something to the thing and then it does something to us in return"* [3 p.46]. Dewey developed his argument into a model to describe what happens when a person interacts with their environment to create new value. This model is described by Vlad Glaveanu et al[4] below and summarised in Figure 1.

For Dewey, what brings action and creativity [and, in my view masterly performance] together is human experience, defined precisely by the interaction between person and environment and intrinsically related to human activity in and with the world. …Action starts….with an impulsion and is directed toward fulfilment. In order for action to constitute experience though, obstacles or constraints are needed. Faced with these challenges, the person experiences emotion and gains awareness (of self, of the aim, and path of action). Most importantly, action is structured as a continuous cycle of "doing" (actions directed at the environment) and "undergoing" (taking in the reaction of the environment). Undergoing always precedes doing and, at the same time, is continued by it. It is through these interconnected processes that action can be taken forward and become a "full" experience."[4 p2-3]

Figure 1 Summary of Dewey's model of human experience within which human creativity emerges. Adapted from an illustration by Glaveanu[4] and using Ingold's concept of environment. [5]



I have adapted the figure to propose that the perfect performances of elite athletes, like Alex Honnold, can also be explained by the model. In my adaptation, imagination is used to perceive affordance (see the opportunities for action) in the challenge and stimulate an emotional response that drives the will to act on these affordances. As a person interacts with their environment (as Alex practised the climb over and over again), they undergo and develop their enactive imagination which helps them to perform complex tasks and routines and ultimately leads to confidence to perform at the level of perfection.

This synthesis of Dewey's model brilliantly explains the pathway that Alex took to mastering El Capitan. Years of practice as a rock climber and competent free solo climber meant he had undergone and prepared himself to the point where he could imagine taking on the ultimate challenge of El Capitan. Being able to imagine he could actually accomplish the climb was the motivational force behind the physical and effort needed to achieve his goal. There followed years of focused preparation (undergoing) on the actual climb in order to practise every move and movement, tackling the multitude of problems he encountered and through his actions and experiences developing muscle memory and his enactive imagination – enabling him to recall and re-enact every move and movement he had perfected. It was only when he had undergone to this level that he had the confidence to undertake the climb.

This account of the place of enactive imagination in elite performance is supported by a number of thinkers and writers Wittgenstein emphasised the agential aspects of the imagination and linked the concept to the 'mastery of a technique'. He talks about the imagination as consisting of an experience that requires practice and engaged action.[6p319] A concept developed further by Medina, "*I submit that the enactivist proposal……is that we should understand the imagination as an enactment or re-enactment of experience in this sense, that is, as an embodied and interactive exploration of the world".* [6p319] Hutto also emphasises that experiences are not discrete spatio-temporal objects, but, rather, meaningful interactions between the subject and their environment through which they 'undergo' they become a different person[7].

"The only way to understand 'what-it-is-like' to have an experience is to actually undergo it or re-imagine undergoing it. Gaining insight into the phenomenal character of particular kinds of experience requires practical engagements, not theoretical insights. The kind of understanding 'what-it-is-like' to have such and such an experience requires responding in a way that is enactive, on-line and embodied or, alternatively, in a way that is re-enactive, off-line and imaginative—and still embodied. It involves undergoing and/or imagining experiences both of acting and of being acted upon." [7p52]

Studies of skilled and less skilled climbers[8] have revealed significant differences in their abilities to judge their own capabilities and to recall particular sequences of movements.

"Experts' cognitive abilities adapt in response to the challenges they face in order to produce elite-level performance. Expert athletes, in particular, must integrate their motor capabilities with their cognitive and perceptual processes. Indoor rock climbers are particularly unique athletes in that much of the challenge they face is to accurately perceive and consolidate multiple movements into manageable action plans. In the current study, we investigated how climbers' level of expertise influenced their perception of action capabilities, visual memory of holds, and memory of planned and performed motor sequences. In Experiment 1, climbers judged their perceived capability to perform single climbing moves and then attempted each movement. Skilled climbers were less confident but perceived their action capabilities more accurately than less skilled climbers. In Experiment 2, climbers recalled holds on a route, as well as predicted and recalled move sequences before and after climbing, respectively. *Expertise was positively associated with visual memory performance as well as planned and recalled motor sequence accuracy. Together, these findings contribute to our knowledge of motor expertise and suggest that motor expert's ability to accurately estimate their action capabilities may underlie complex cognitive processes in their domain of expertise."* [8 p494] [My emphasis]

Why is this story important for education

I wanted to include this story in this curated collection of articles because it illustrates so well the way imagination is used in acts of embodiment and how it is developed through processes of undergoing as people interact with real world challenges in their environment. All too often in higher education we think of imagination as part of our intellectual/creativity skill set but we must not forget that it also plays an important role in our practice and performance skill set. Musicians in particular appreciate this and I refer you to an article by Christina Kobb[9] which provides deep insights into the way a concert pianist develops and makes use of enactive imagination through a process of undergoing for perfect performance.

Alex's story of mastery explains how an elite climber at the top of their game advances their own practice in order to achieve unique feats in their domain of practice. His story reveals his process of undergoing and how this process enabled him to develop his imagination and memory, like a muscle, and integrate its work with his bodily actions and psychological states in order to perform in a unique and inhospitable environment.

"The imagination is a mental muscle that becomes stronger the more one uses it. It becomes more agile. One develops greater confidence in what it can do and one's ability to then translate it into learning and action in the real world." [10 p23]

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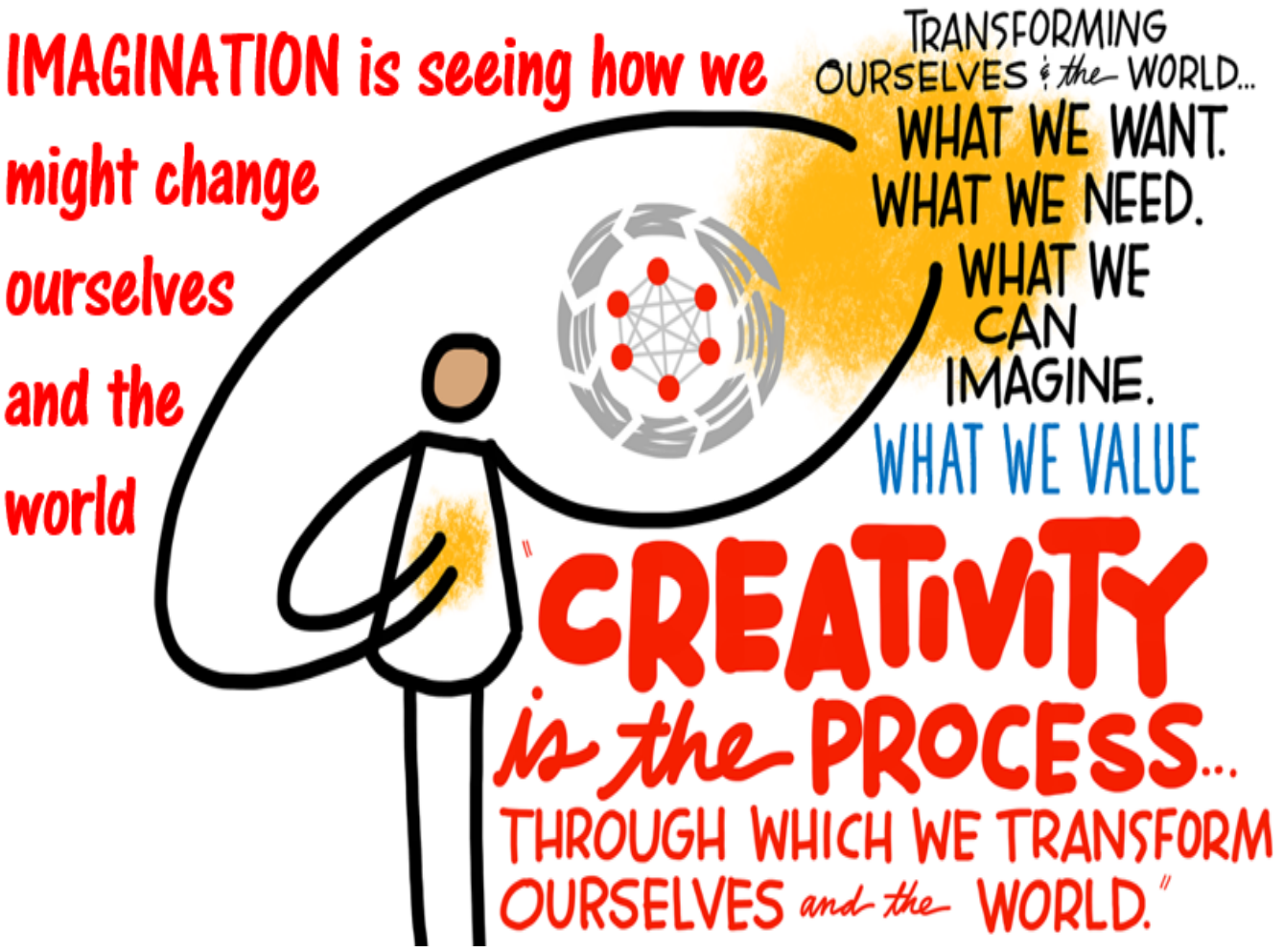
Part 4

IMAGINATION FOR SYSTEM CHANGE



Why Imagination needs to be at the heart of Education in the Middle East and North Africa (MENA)

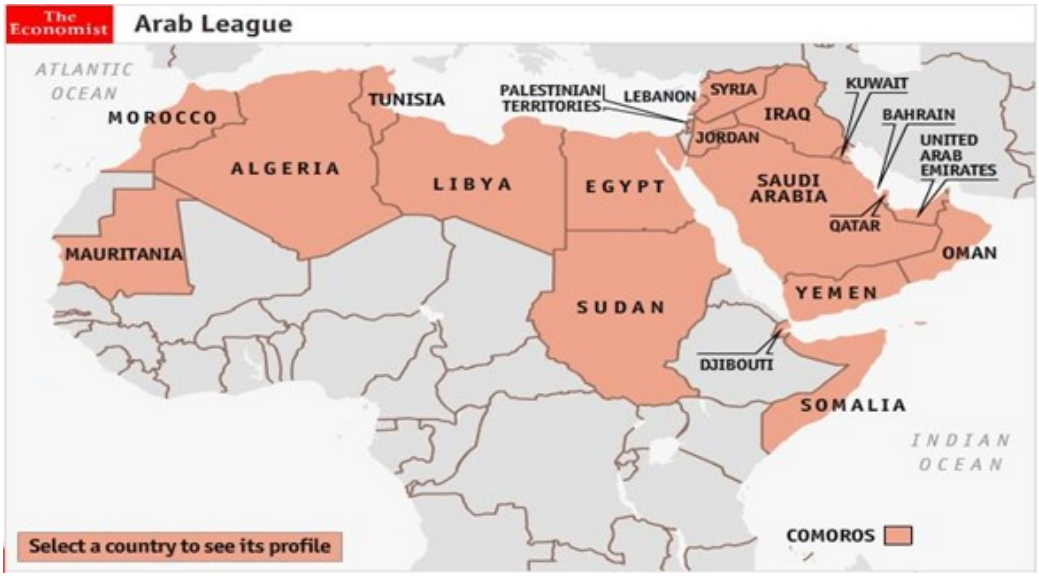
Cameron Mirza

Cameron is a director for global career accelerators, previously he was UAE Director for Nottingham Trent University and spent several years reforming the higher education sector of the Kingdom of Bahrain. Firstly, as Head of Strategy at the Ministry of Higher Education, then as Director of Strategy for the University of Bahrain. He also is an advisor to the Egyptian Knowledge Bank supporting the improvement of Egyptian higher education sector. He is a board member of BETT MEA and The Gulf talent advisory board at Oxford University.

In 2011 my career and personal life went through a significant change when I accepted a job to move to the Middle East from the UK. Moving from London to Bahrain with only one suitcase and never having visited the country before, my imagination was full of preconceived ideas about how the oil money must be creating world-class education systems and how the petro-money must have created schools and universities with the latest technologies, with no expense spared. Hiring the best teachers to push forward an education system that would deliver young people with the knowledge, skills, behaviors and attitudes that could propel the Arab world into the fourth industrial revolution.

As I write this the imagination of the United Arab Emirates has enabled them to join the ranks of just a handful of elite space-faring countries around the world by launching its first interplanetary mission to Mars. A remarkable achievement for such a small and young county, driven by imagination and tireless efforts. Yet the unbounded imagination should not stop there, the starting point for reimagining the future economies and intergalactic missions should start with the education systems of the MENA region[1] (Figure 1).

Figure 1: Map of the MENA Region



Why we need to reimagine education in the Middle East and North Africa (MENA)

Across the 19 countries, the MENA region accounts for approximately 6% of the world population, with approximately 50% of the population under the age of 25. Sadly, however, according to the World Bank [2] due to civil war in Syria, Iraq, Libya, and Yemen fifteen million people have been displaced, many to fragile or economically strapped countries such as Jordan, Lebanon, Djibouti, and Tunisia, giving rise to the biggest refugee crisis since World War II.

In addition to this challenge, youth unemployment is amongst the highest in the world, according to the World Bank, in all MENA countries with available data, youth unemployment rates are higher than the world average of 13 percent (Figure 2[3]). The highest rates are in countries as diverse as Palestine (43%), Saudi Arabia (42% among nationals), Jordon (36%) and Tunisia (36%).

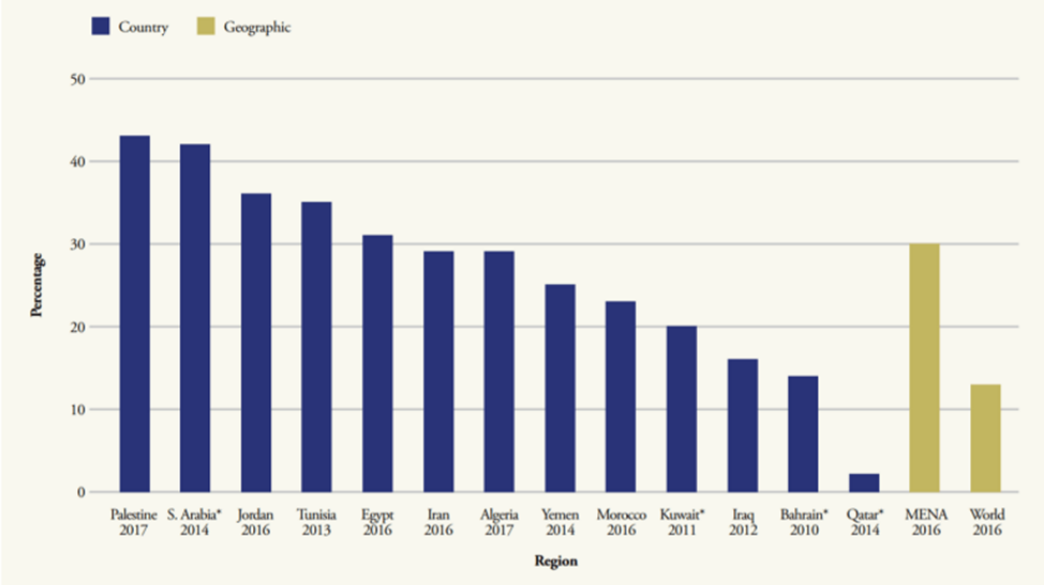


Figure 2 Unemployment rates for MENA

**GCC nationals only sources: ILOSTAT Database, accessed May 2018. Unemployment rates for MENA and the world are from ILO modeled estimates. Rates for individual countries are from national estimates. For Saudi Arabia, Kuwait, Bahrain, and Qatar, rates are reported or calculated by the author using data from each country's national statistical agency*.

Given the challenges of the MENA region, to view the issue of youth unemployment in simplistic terms is unrealistic and is a complex area that covers multiple dimensions of youth policy, including migration, health, education, employment, culture, and civic and political participation. Education, however, is a critical component of addressing this complex issue and this is reflected in the priority that education now commands in state budgets. It accounts for an average of 18.6 percent of government spending in the region, compared with a global average of 14.2 percent [4]. Yet, given this amount of spending, the outcomes of the education systems across the MENA region are not inspiring.

Beginning in 2000 and every three years since, the OECD program for International Student Assessment (PISA) has tested 15-year -olds around the world on math, reading, and science; it also surveys students, principals, teachers, and parents on their social, economic, and attitudinal attributes. In the Middle East and North Africa (MENA), six countries participated in the 2015 PISA, the United Arab Emirates and Qatar, two countries from North Africa, Algeria, and Tunisia. Two countries from the Levant, Jordan, and Lebanon. On the whole, MENA's PISA scores lag behind not only the OECD average but also behind other countries at a similar economic level. Suggesting that imagination is very much needed to consider how the education system might be further enhanced for the future.

My time in the MENA region

I often imagine myself back in Cairo with the professors and teachers of all the Universities of Egypt, who care so passionately about their students and the challenges they face with a lack of resources and a growing population of over 100 million. The huge young population inspired and having their imagination stoked by their idol Mo Salah the Liverpool footballer, an icon for all Egyptians and the Arab world, and the catalyst for the youth to imagine a different and exciting pathway for themselves, to express themselves on the global stage. I can believe that a young Mo Salah dreamt of and imagined lifting the European cup like he did on a balmy summer evening in Madrid in 2019 or playing in front of 60,000 football crazy fans every week.

I imagine myself back in the classrooms of the University of Bahrain where the talented, proud, and ambitious youth dream about how they can realize their ambitions through becoming an entrepreneur or supporting their family business.

I have been thinking about how imagination needs to be developed in young people particularly in the MENA region to give them the capacity to think big and have aspirations that are far wider than their current circumstances, to ask the question, what if I…? How should teaching be reimagined beyond the current state and the current student outcomes to provide the platform for the socio-economic development of the region? How could imagination in teachers, education leaders, and students become central to supporting long term economic prosperity, improving the quality of life, reducing poverty, and providing long term peace to the region? By imagining what is possible rather than what is probable.

No passion no point

The critical success factor in any education system is the teaching workforce, I have been very fortunate to have encountered many great teachers on my travels in the MENA region, however, my overriding feeling is that too many enter the teaching profession because they imagine it's a good job, rather than following their passion and imagining how every lesson can shape the life of a young person. Teacher training colleges across the region must be able to both recruit teachers with a genuine passion for education and instill within the future teaching workforce a zest for imagination within the classroom. The combination of imagination and passion within a teacher is a powerful tool in unlocking the potential within young people, by creating learning environments and designing curriculums that support imaginative thinking and raising aspirations of all students. I imagine how teacher recruitment systems and career progression is based on far more than ticking boxes that are based on compliance, but also taking into account a teacher's intrinsic motivation, burning desire and imagination to help shape the future of their country.

Mindsets without imagination

It is hardly news that students' attitudes and beliefs influence their academic performance. The magnitude of this effect, and which mindsets matter most, is still under debate. While there is likely a linkage between socioeconomics and student mindsets, measuring the effect of mindsets is not explained by socioeconomics alone. By analyzing the PISA data, research finds that mindset factors have almost double the predictive power (35 percent) compared to home environment and demographics (11 percent) on student PISA scores in the MENA countries surveyed (Figure 3) [5]. That is much greater than in other regions, where mindsets typically have about double the impact of the home environment. Mindsets matter everywhere, but particularly in MENA. With that in mind, there is no reference to creativity, imagination, curiosity, or collaboration. What might be possible and what gains could be made if imagination was embedded with the learning environment?

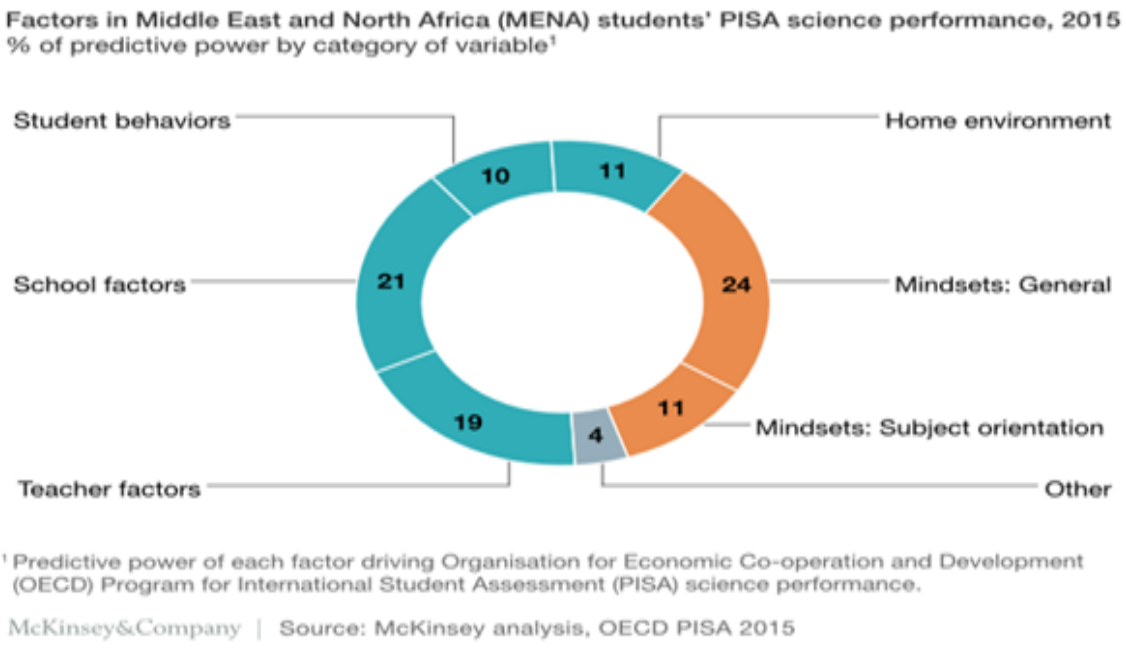


Figure 3: Mindsets eclipse home environment in predicting student achievements in MENA countries

Imagining the future of education in the MENA region

The necessity for the region to develop economically is of paramount importance and to embrace the advent of the fourth industrial revolution to create jobs, entrepreneurs, and lead innovation. All this requires a society that can be curious, willing to take intellectual risks, and have a level of creativity and imagination that comes from the confidence of deep knowledge and the ability to experiment with that knowledge. I imagine the future schools of the region being places without walls, where learning can happen in open spaces and teachers can merge classes regardless of the children's ages. I imagine that traditional curriculums and subjects are replaced by collaborative teams working to solve real-world challenges in an interdisciplinary, multidisciplinary environment such as tackling climate change or population data sets around global pandemics. The world does not function linearly and neither should education.

Imagine real-world solutions being co-developed with employers, NGOs, charities and Government agencies with students working to solve local and global issues using imagination and creativity through minds that have not been institutionalized by traditional classrooms or traditional learning methods. **Imagine students being taught and assessed by their peers, or being taught and assessed by practitioners** from science, the arts or business. **Imagine traditional exams being replaced by student portfolios and real-world experiences** that demonstrate knowledge, creativity, imagination, collaboration, and critical thinking rather than memorization of facts. **Where standard tests and multiple-choice quizzes are replaced by multiple and contemporary assessment methods because life is not based on multiple choice**. I can imagine a teaching workforce full of imagination on how they can change society for the better, able to experiment, have fun in the classroom, and supported by school leadership that advocates teacher autonomy and embraces imagination as part of its ethos.

The future of the MENA region is to move beyond a knowledge economy to an innovation economy, led by young people who are able not just full of curiosity and imagination sparked by their teachers, but who are also resourceful enough to contribute to society, the economy, and their country.

Imagining my future

I often think about my future and imagine the role I can play to facilitate these changes, supporting the life chances of young people in the MENA region. I can see a future where I work with education policymakers, education leaders, and teachers to help them reimagine the future of education. To help them unravel the layers of institutionalized thinking and the fear of change and to keep asking the question, what if? To place imagination at the heart of the future of education in the MENA region, in the classroom, in school culture, in school leadership, and policymaking will require a cultural shift. The shift will require boldness, it will require experimentation and will require restlessness. Restlessness lies at the center of the new paradigm, the ability to keep moving forward to continually strive for improvement, to try new things, and to have the confidence to change the status quo. I imagine my future asking the difficult questions, challenging and bringing stakeholders together to reimagine the future.

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Imagination for Radical Change: Seeking the White -Water 'Through Lines' for Sustainable Flourishing

Barry Carney

Barry has a professional background in practical and creative industries. He applies this experience to his research work: exploring complex challenges, and the means of developing (i.e. educating for) the capacities needed in response. He most recently studied at the Centre for Alternative Technology – an education hub for sustainable solutions. Amongst other roles, he is a Change Agents UK research associate where his primary focus is on positive transformations via action- and values-based pathways. Barry has recently joined the Lifewide Education Team.

Why radical change?

In the age of the Anthropocene, with interconnected global challenges, rapid digital development and intensifying unsustainable trajectories, the deliberate pursuit of knowledge which is subsequently inept or harmful overshadows the cultivation of wisdom[1]. Existential threats and social-ecological injustices do not need relisting here. We need radically new ways of thinking and acting. *Imagination* is pivotal in shifting paradigms towards sustainable flourishing.

In the opening article, Ann Pendleton-Jullian talked about a white water world full of turbulence and disruption[2]. Wherever disruptive events destabilise the status quo – e.g. the current pandemic and climate changes – they prompt critical reflections, altered behaviour and appraisals of values, often leading to significant transformations[3]. Such discontinuities are invaluable for triggering systemic changes, yet they are *reactive.* The times demand *active*: pre-emptive, wise and radical intervention in order to bring about the much-needed transformations, now and into the future.

Within the turbulence, are our skills for 'imagining better' improving? Theory and practice are still mishandled as separate pursuits (e.g. academic disciplinarity); creativity and innovation are quashed or hijacked by modern 'needs' (e.g. continual financial growth); and the notion of equity as the business of fairness and impartiality has been traded and lost on the stock market. In trying times, it can seem insurmountable to imagine just what practical wisdom entails and the fruits it may bear. But in recognising everything as a fuel-source for imagination, I believe we can do better *and* enjoy the process.

Imagination at work

Like issues of 'power', 'spirituality' or 'sustainable well-being', imagination is without firm edges. It is dynamic, contextual and ambiguous – fitting characteristics to overlay with 'wicked' problems and challenges in a white water world. Like the other examples, imagination is undoubtedly a 'thing': a notion we have a sense of; a profound aspect of human existence that guides us and which we can direct.

'Imaginationful' - sitting and running with imagination

I began probing the pronounced experiences which emerged when I asked, "How do I imagine? And when and why?" Thoughts flitted around, a variety of things appeared – memories, concepts, questions – catching glimpses as to what role imagination plays in my work with social-ecological transformations.

I see how imagination journeys, running on as a process, an active state. As one might be *in* reflective contemplation, *in* learning, or *in* love, might one be *in* imagination? What is imagination's relation with wondering, wonderment and the wonderful? It is a shame that 'imaginationful' doesn't sound particularly catchy. I imagined, in boring detail, my future self doing admin tasks, hereabouts realising my imagination had wandered off to somewhere more interesting – when needed, imagination will faithfully help us through the necessary, sometimes tedious tasks of life.

Having a practical background, I often learn and imagine 'on the job'. During creative work, imagination has an increased 'felt' or intuitive quality, with flares of 'aha!' moments sparked by imperceptible catalysts. Images are received rather than conjured. In other ways, imagination is deliberative, narrative, and unfurls over time, integrating new details and experience. It interweaves with the rest of reality – inner and outer worlds playing as one. Are we dancing puppets, the dancing puppet-master, or both?

Regardless, we are exploring concepts fundamental to human *beings,* yet they remain outliers of our daily lives, existing beyond the scope and comprehension of mainstream reasoning[4].

Working in entertainment industries, making props and sets, I would imagine what a client was imagining when describing a scene. 'Mood boards' full of images and descriptors helped. Open communication and a flexibility in one's assumptions and beliefs also help when touring someone else's imagination. Is this conversing in a language of imagination? – co-imagining to build a shared reality? How can our imaginations become accessible? Edgar Schein's[5] Humble Inquiry ("*the gentle art of asking instead of telling*") comes to mind. A little more on humility later…

In construction, one often imagines latter stages of assembly to inform an immediate course of action. If an action later proves to be ineffective, one will re-imagine the action anew, and iterate the process with the benefit of additional experience. This resembles methods of 'futuring' and 'back-casting'; scenarios-based processes prevalent in sustainability planning. Evidently, imagination has a relaxed temporal nature (and we simply don't have *the time* to define it here).

Can these reflections transfer to being *active* rather than *reactive* for the sake of sustainable well-being? How do we liberate the values and qualities of a wise imagination? Increasingly understood in a context of white-water challenges, there is no single 'silver-bullet' solution[6]. The quest for certainty has become the experience of uncertainty[7]. Great! Our imaginations are unshackled from an impossible quest, re-applicable to Life. This re-application needs clarity of purpose and strong support. Our Higher Education Institutions (HEIs) need repurposing for precisely this task: reimagined as Academies for developing 'Pragmatic Imagination' with complexity-savvy graduates equipped to reify flourishing visions.

Donella Meadows[8] helped uncover the deepest leverage points for rousing systemic transformation: the **goals of the system**; the **mindset or paradigm out of which the system arises**; and, most impactful, the **power to transcend paradigms**. Mid-impact leverage points include things such as the rules of the system, while 'stock and flow' adjustments typify low-impact. Only deep system change will do. To reimagine and transform social-ecological trajectories, HEIs must themselves be reimagined and transformed[9].

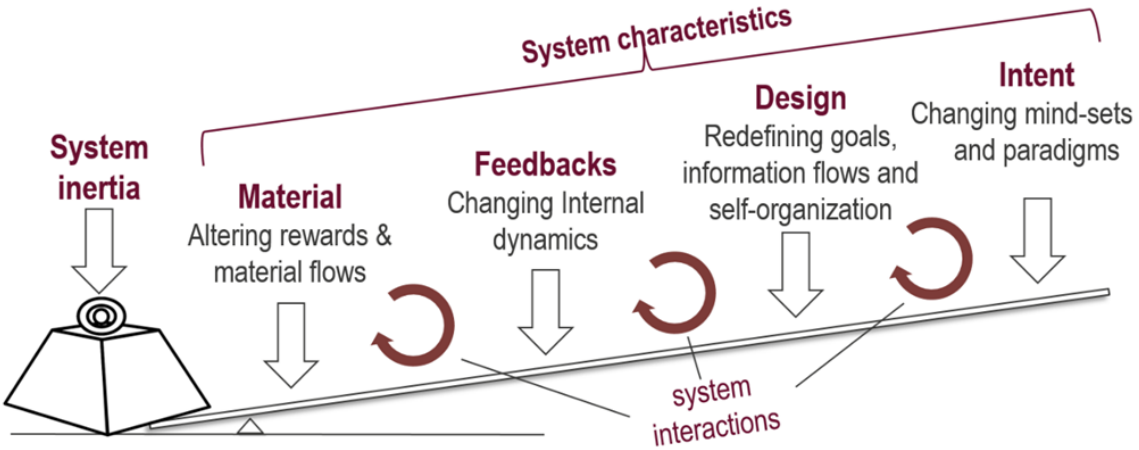

Figure 1 The Leverage Points Framework (graphic by Dave Abson). We need imagination to leverage transformation in all aspects of the framework.

Higher Education reimagined

What do we know about what we are trying to imagine? Imagine educational programmes where to study is to develop and engage as a responsible citizen; and to graduate is to pay that forwards beyond the programme. Imagine education, beyond the institutions we attend in our youth, as an unrestricted lifelong and lifewide adventure, oriented around inner and outer landscapes, embracing diversity in all its manifestations. Imagine educational spaces that encourage moral inquiry, positive local impacts, theory-practice cohesion and an ongoing love of learning. Imagine which culturally inherited beliefs need razing and raising.

With rapid globalisation and an emphasis on their international standing, our HEIs are well-positioned, yet dislocated. The majority need re-integrating within their localities to participate in social-ecological regeneration. The need to 'decolonize' universities is gaining firm traction, calling for imaginative abilities to define new curricula, pedagogies, structures and economies[10] – literally, *household management*. Each HEI must transcend merely reflecting ['objectively'] on the complexities of life – a mirror image is barely *reactive.* HEIs need to understand and function *as* complexities. They will, in essence, be teaching the skills

of transformation needed to transform themselves. They will simultaneously need to practice what they teach, pursuing their own undoing and improved redoing.

The current pandemic and its shockwaves show we are inherent change agents: behaviours, policies, operations, relations, social and ecological climates have all changed, at pace and at scale. The groundswell of young activists shows a passion for change: they want to "learn for life[11]" and will seek it wherever it best exists. To support learning for life, reimagining universities as ecologies aptly embeds them within dynamic systems, connecting individual, collective, local, global, human, non-human. For HEIs to commit to deep change – and they will have to – they must overcome their reluctance to shift to the front foot of social-ecological progress[12]. Every action (and inaction) manifests an effect. Therefore, the pragmatic, ecological university, must be pursued without compromise.

***My imagination's prompt: The opening article[2] enlightens:**

"[a whole-spectrum, pragmatic imagination] is especially critical when the box is changing shape

Learning to imagine radically

Imagination helps us hold what we cannot always see or know, giving expression to profound complexities, from which we can re-frame our thinking. Whether deliberately or not, our horizons are expanding. Experiences unbox our thoughts, and we can re-think the box from the outside. With concerted efforts we repurpose boxes in wild ways, sailing off in them towards the horizon.*

We can imagine equitable and thriving life but until we develop imaginations for praxis, that potential stagnates. The sustainability literature bursts with systemic-change theories but lacks experience of their application[13]. But we must also recognise that practical achievements are easily overlooked when they are not clearly definable. The narratives; inquiries into systems thinking; expansion of our learning ecologies through the confluence of disciplinary perspectives, all practically feed into a new-world image. In so doing, new experiences are created in reality.

Imagery can portray hard-to-grasp sustainability concepts – otherwise difficult to communicate using language alone – and expose us to alternative possibilities[14]. Exposure to new information amplifies the importance of collaboration. Inter- and trans-disciplinary methods are largely considered a pre-requisite of any serious Sustainability Sciences. By increasing and diversifying our experiences and relaxing the grip on our own beliefs, we enhance our imaginative faculties and capacities for wise progress.

Artworks, landscapes, stories, objects and relationships are received by each individual in unique ways. Rather than being an unquantifiable thorn in the side of modern science, rich ambiguity is a strength to be employed[15.] Our current ignorance of the nuanced 'other' becomes an empowering means of discovery[16].

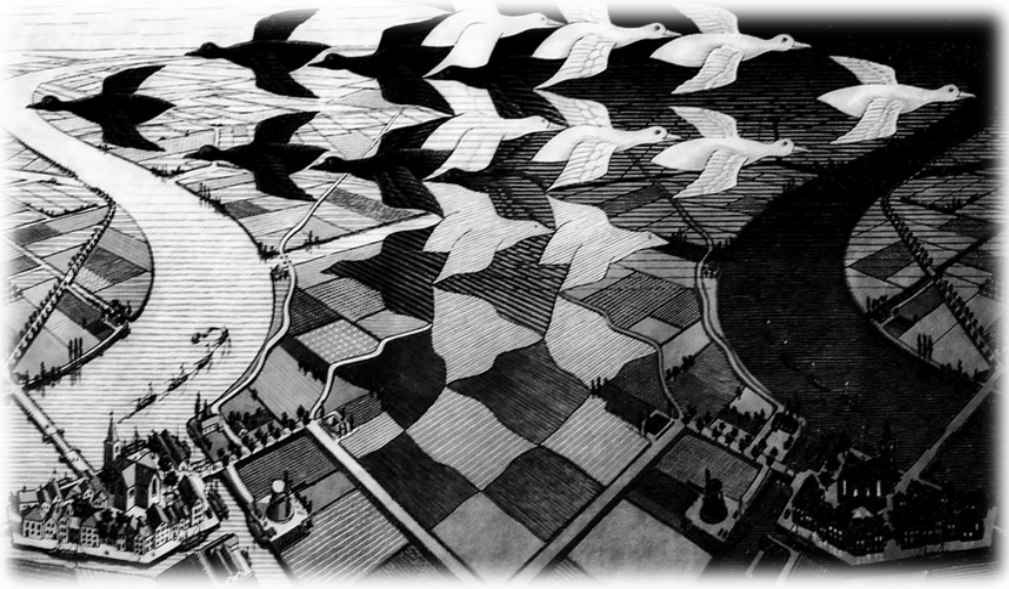

Figure 2 Max Escher's "Day and Night": tessellation expresses bi-directional co-existence

Apparent in Escher's "Day and Night" (Figure 2), the boundary edges of one thing give form to the other – each Other entirely co-dependent for their existences: a reciprocal dynamic with cause and effect indistinguishable. This leads us into co-evolutionary perspectives where *interior* and *exterior* are co-formative. Imagination is the free-flowing négociant between both.

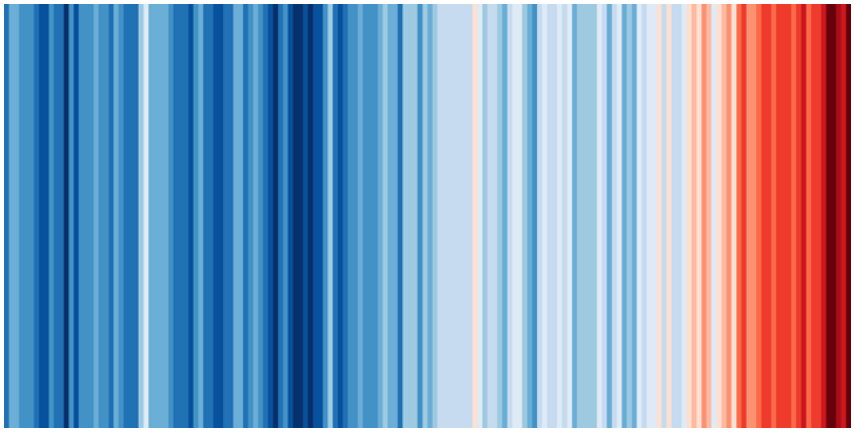

Figure 3 "Show your stripes" is a visual representation of global temperature change between 1850 and 2019. The illustrative blue to red 'warming stripes' image has been readily adopted beyond research institutes and makes important scientific data widely accessible. Such images can be used to trigger new imagination and help us think more realistically about our future.

Humility allows us to witness reality (rather than deny it, for example) creating space for wisdom[17]. Wisdom has its roots in reality: contextual, in flux, useful, surrendering and in service to the higher emergence and mystery of the universe. Free from quests for certainty, embracing a high sense of wonderment forms a thoroughfare to 'pragmatic fallibilism' – a philosophy tolerant of ambiguity which allows one's beliefs to be malleable[18]. With literal origins amongst the *humus*, the down-to-earthedness of humility is grounded and connected to the real[19]. Allan Hazlett[20] balances an *intellectual humility* between intellectual dogmatism and timidity: not 'head in clouds' nor buried in sand. My suggestion is that an honest, barefoot connection to what *is* can ground our Pragmatic Imagination.

Summary

Aristotle's virtue of phronesis – often expressed 'practical wisdom' or '-judgement' – places the source of goodness within actions. The *means* are of themselves *ends* and, as such, 'good resolutions' such as flourishing futures are a motivational state. This requires that we imagine, develop and act upon moral judgement[21]. In a white water world, where we imagine the calm waters beyond, our actions are to a large extent trust-based: rooted in our intentions and driven by our values. Wheresoever HEIs serve to curate wisdom, they will need the humility to move from knowing to not-knowing[22], which again places importance on the quality of action. For navigating the white-waters, our imagination must be deft and engaged: alerting us to immediate and envisaged dangers (and the secondary danger of fixating on these); assessing the constant changes and discerning best-course reactions; and evoking novel, reflexive ways of communicating our experiences against the white noise. Imagination, should we allow it, is our constant white-water 'through-line' – the linking thread between what we know, where we are and where we're going: it will show us possible ways of getting there but we will only get there if we use our imaginations to transform ourselves and the world.

***Addendum**: I am very grateful for having cause to reflect* in *imagination, something which enhanced my curiosity and playfulness (in perpetuity, I hope). With that, I invite and encourage you to actively explore it in your own way – its daily uses to its blurry edges. I welcome your reflections:* Barry@silverseed.co.uk

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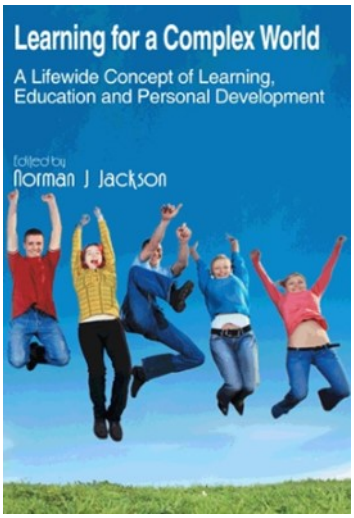
Lifewide Education's 2020-30 Vision For A Community of Networks

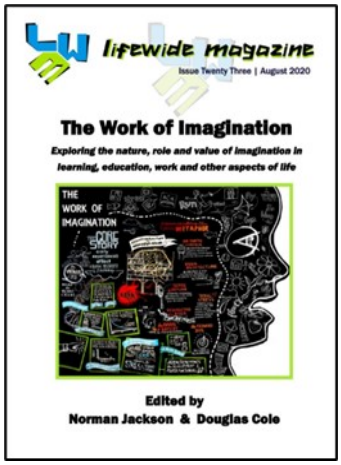
As we enter a new decade it is right to review our role and work as a voluntary, interest-driven and community-based organisation and refresh our approach and what we have to offer for the years ahead. This article sets out the current status of Lifewide Education and draws attention to the need to revitalize our offer and make our organisation more effective, relevant and sustainable so that we are better able to work with the diverse communities we serve. The significant idea underlying our work is captured in the inspiring words of Eduard Lindeman, written nearly a century ago, 'the whole of life is learning therefore education can have no ending'[1]. It is this inspiring vision that has caught our imagination - a comprehensive, inclusive, ecological, lifewide and lifelong concept of learning and development embracing all the dimensions of our life that seems most relevant and appropriate for the uncertain, turbulent and disruptive world we inhabit. Ultimately, it is our desire to help learners prepare themselves for a lifetime of living and learning in this white water world.[2]

Three perspectives on lifewide learning

Looking Back – the origins of Lifewide Education lie in the work of the Surrey Centre for Professional Training and Education at the University of Surrey, one of the Centres for Excellence in Teaching and Learning funded by the Higher Education Funding Council for England. Between 2008-11 SCEPTrE developed and applied the idea of lifewide learning and education. This work provides a substantial practical and researched evidence-base on which to develop the concepts.[3]



Inspired by the learning gained through SCEPTrE's work and the immortal words of adult educator Eduard Lindeman[1], Lifewide Education was founded by Professor Norman Jackson as a community interest company in 2011. With the help of numerous volunteers and no external funding we have: 1) established a reputation as an honest advocate and champion for lifewide learning and education, 2) attracted and served a global community of interest with nearly 600 subscribers to our mail list 3) created a HUB https://www.lifewideeducation.uk/ hosting a range of free open access resources 4) conducted numerous scholarly explorations of ideas relating to lifewide learning and education and published these through our open access Lifewide Magazine[4] now in its 23rd issue and accessed over 22,500 times 5) brought together practitioners in UK universities who are responsible for skills awards to share their practices through a conference and e-book[5] and 6) developed an entirely new way of thinking about learning and practice through the concept of ecologies for learning and practice publishing two books[6,7] Through our activities we gained international recognition through Harvard University's Learning Innovations Laboratory (LILA) inquiry into learning ecologies (October 2019).[8] At a policy research level, Lifewide Education contributed a vision paper[8] and participated in an EU Foresight Study Workshop 'Open Education 2030' aimed at developing a vision of adult learning and education in 2030[9].



Lifewide learning focuses attention on the holistic development of people. Lifewide Education focuses on the culture, infrastructures and pedagogical practices needed to encourage, support and value lifewide learning. The focus of lifewide learning is on the way individuals develop themselves as whole people through all the affordances (opportunities) they can find or can create within their own lives. Lifewide education refers to the approaches adopted by educational institutions in order to embrace the holistic whole-of life development of individuals. It is as much concerned with the development of attitudes, values, character and creativity as it is with the intellectual development of individuals that is often the traditional focus of secondary and tertiary education.

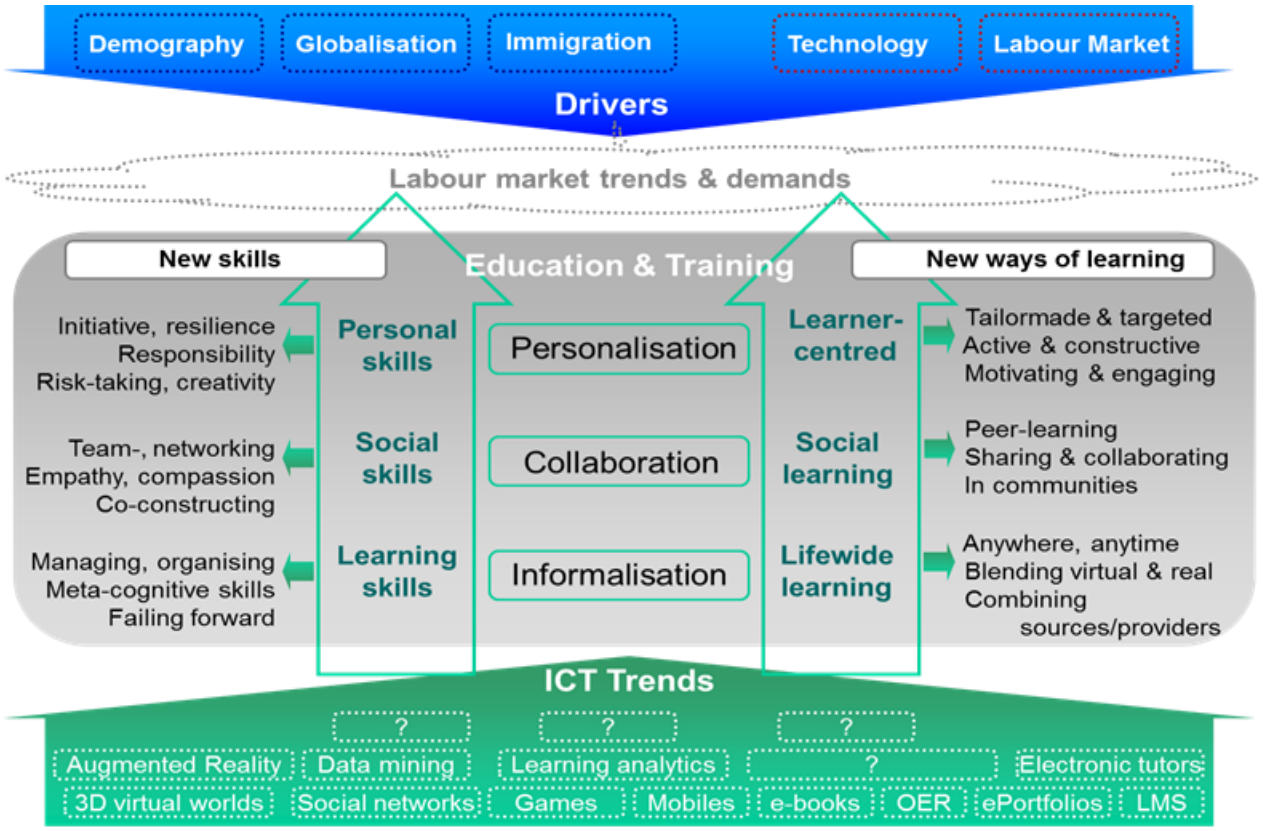
In the UK, the concept and practice of lifewide learning was grown in higher education where they can be related to other policy- driven and practice-based movements for example those relating to – personal development planning (PDP) and e-portfolios, employability, leadership, citizenship, volunteering and social inclusion to name a few. The extent to which Lifewide Education as an organisation has been able to connect to such practitioner movements is questionable.

Looking Forwards to 2030 In an attempt to look over the horizon at what learning will be like in 2030, the EU commissioned the Joint Research Centre IPTS to undertake a Foresight study in 2009 which was published in 2011[10]. The study aimed to identify, understand and visualise major changes to learning in the future. The process developed a descriptive vision of the future, based on existing trends and drivers, and a normative vision outlining how future learning opportunities should be developed to contribute to social cohesion, socio-economic inclusion and economic growth. Figure 1 summarises the most important components of this vision which might be summarised in these words.

> *The overall vision is that personalisation, collaboration and informalisation (informal learning) will be at the core of learning in the future. These terms are not new in education and training but they will become the central guiding principle for organising learning and teaching.* ***The central learning paradigm is thus characterised by lifelong and lifewide learning*** *and shaped by the ubiquity of Information and Communication Technologies (ICT). At the same time, due to fast advances in technology and structural changes to European labour markets related to demographic change, globalisation and immigration, generic and transversal skills are becoming more important. These skills should help citizens to become lifelong learners who flexibly respond to change, are able to pro-actively develop their competences and thrive in collaborative learning and working environments.*[10]

The explicit role played by lifewide learning in this vision of near future learning is connected to the ideas of learning anywhere/anytime, informal learning and the capabilities to plan, manage and self-regulate own learning and development. These capacities will be key to being an effective learner in this vision of future learning as it unfolds in the decade to come. But lifewide learning is also connected to the ideas that learning is both personal and individual, yet also social and collaborative. Lifewide learning provides a learning paradigm that enables the learner to view themselves *'as the designer of an integrated, meaningful life experience. An experience that incorporates formal education as one component of a much richer set of experiences that embrace all the forms of learning and achievement that are necessary to sustain a meaningful life'*.[11 p115] Such a perception also enables learners to see their life and how they chose to use it as their essential resource for their growth and development as a person.

Figure 1 Conceptual map of the future of learning 2030[10]



Source: IPTS (2011): „The Future of Learning: Preparing for Change",
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Looking Forwards 50 years from now – the children, adolescents and young adults of today who are participating in education (and all the other parts of their life) will be the workers and citizens of societies 50 years from now. They will live in a world that is unimaginably different and we argue that the way we educate today will lay the foundations for survival and flourishing in the distant future. In this context lifewide takes on new meaning and relevance. In all societies education is used instrumentally to prepare people for work – to equip them with knowledge and skills so that they are employable both generally and more specifically. But the emphasis is on the short term – entry into the work force. What societies need to be doing now is paying attention to the more distant future – that is the real challenge for tertiary education and why the idea of lifewide learning with its concern for the development of the inner character core of people is so much more relevance now than it did a decade ago. For we have entered the machine age - the age when human beings will compete with machines which will progressively out-perform us; an age where humans as biological machines may well transition to becoming humans that are partly genetically engineered and partly mechanically and electronically engineered.

While nothing is certain about the future there are lots of pointers that indicate that the role currently performed by work will significantly change. Economist, Danial Susskind's new book 'A world Without Work'[12] paints a vivid and sometimes scary picture of a future containing far fewer opportunities for work than the present. In such a social environment people will a) have to be financially supported by their Governments through some sort of universal wage and b) have to be able to find purposes and meaning in their lives that are not related to work (the activity through which most adults in their day to day life currently find purpose and meaning). We argue that the development of an appreciation of how life provides such affordances through a lifewide approach to education would help build a foundation of awareness that will help people sustain themselves in their distant future.

> *Although we cannot tell how long it will take to arrive at a world with less work for human beings to do, there are clear signs that we are on our way there. The problems of inequality, power and meaning are not lurking in the distance, hidden out of sight in the remote future. They have already begun to unfold, to trouble and test our inherited institutions and traditional ways of life. It is up to us <u>now</u> to respond*[12 p238]

Lifelong – Lifewide learning & education

Our vision is to continue to develop, support and advocate a paradigm of human learning, education and development that is 'lifewide' as well as 'lifelong': a concept of learning that recognises and values that 'the whole of life is learning therefore education can have no ending'[1] . Lifewide learning is not just about preparation for and performance in the workplace, rather it contributes to the character and wellbeing of the whole person through achievement and self-actualisation. From this vision flows our core purpose - to encourage, through words and actions, a comprehensive, inclusive, lifewide concept of learning and education to sustain individuals, society and the planet.

To realise this purpose we aim to:

- create a self-sustaining *community of networks* (Figure 2) enabling people working in different areas of educational interest to interact and share their ideas and work to harness the collective power of different professional communities in such fields such as: *employability and work integrated learning, skills and extra-curricular awards, careers education, enterprise and entrepreneurship, volunteering and citizenship, mental health and wellbeing, improving access and widening participation, personal development planning, and recoding achievements through the HEAR*
- work collaboratively across different areas of educational interest, concern and practice to help develop a higher education ecosystem that supports a holistic, lifewide approach to learning and education thereby enabling learners to develop and sustain themselves through long and complex lives in an increasingly, fluid, turbulent and disruptive white water world.

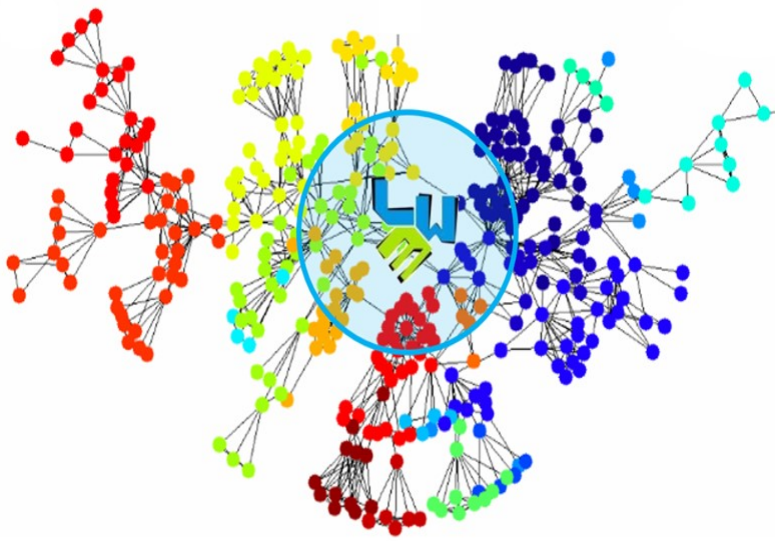

Figure 2 Illustration of the idea of a community of networks – networks of imaginations

The community of networks we are imagining doesn't have to be large but it does have to be active in sharing, receiving, using, curating, disseminating and making use of information and knowledge it develops. The role of members is to facilitate the flow of information from their own practitioner networks to the lifewide education community of networks and facilitate the flow of relevant information back from this community network to their own practitioner network. In time of course we hope that through the relationships we develop and interests we share we might collaborate on projects like for example the production of a magazines, books, webinars and other forms of social interaction.

Planned activities

Lifewide Education has established an infrastructure to support a community of networks and facilitate communication and interaction and exchange of ideas and practices across diverse communities of professional interest.

In 2020-2021, we will provide opportunities:

- for on-going and thematic discussions and the sharing of ideas and resources through
  Facebook group https://www.facebook.com/groups/lifewidelearning/
  Linked in knowledge exchange https://www.linkedin.com/groups/4667550/
- for webinars to stimulate thinking and catalyse practice
- to share scholarship and perspectives through at least one *bookazine* (book length magazine design) on themes that are relevant to all the communities and networks that we seek to bring together.

And contribute to institutional professional and educational development events when invited.

Through these activities we will continue to advance thinking and practice relating to the lifewide-lifelong learning paradigm.

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Lifewide Education Core Team

August 2020

Lifewide Education Team

Top row — Norman Jackson (Director), Doug Cole (Creative Director), Ron Barnett, Rob Ward
Bottom row —Russ Law, Jenny Willis, Barry Carney, Kieran Matthews

We are all volunteers who believe in the proposition that 'the whole of life is learning therefore education can have no ending' If you share our belief and you would like to work with us, or join our team, please do get in touch — normanjjackson@btinternet.com

Editorial Team

Executive Editor	Kieran Matthews
Commissioning Editor	Dr Norman Jackson
Assistant Editor	Dr Doug Cole

lifewide magazine

Lifewide Magazine is the voice of the Lifewide Education community.

It is published twice a year and each issue examines a different aspect of lifewide learning, education, personal development & achievement.

The Magazine is sponsored and published by Chalk Mountain, Education & Media Services Ltd.

Editorial Team

We welcome contributions from members of our community.

Lifewide Education is a not for profit, community-based, educational enterprise whose purpose is to encourage and support a lifewide and ecological approach to learning, personal development and education.

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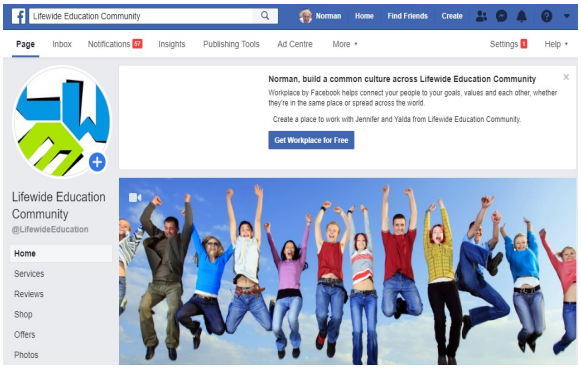

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