creative academic magazine

CAM 18 JANUARY 2021

Creative Frameworks, Tools and Techniques!

#creativeHE Discussion

Compiled & Edited by
Kevin Byron & Norman Jackson

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Introduction to the Magazine

Where does the mind and body end and the world begin? One answer might be the world begins at our fingertips – where our body meets the world. But thinking about this a little more deeply we become more conscious of the way our senses can permeate and make sense of the world beyond the boundaries of our physical body and if we add our powers of imagination and reasoning to our powers to perceive through our senses, the question of where our mind and body ends and the world begins becomes even more problematic. But we can go further - a person acting in the world uses all manner of objects and tools to facilitate and enable particular types of interaction that enables them to perform in particular ways. I wear glasses for example, and without them my ability to read and write these words would be greatly diminished.

The creation of tools, stems from our desire to understand and interact with the world and accomplish things we value. Our desire and use of tools contributes to our being human and indeed may have helped our brains to evolve in the ways they have. Tools are not just about passing on information they contain our knowledge and wisdom often in a form of synthesis so that we can better understand complex patterns and relationships. The production of new tools is one of the ways in which we make good use of our creativity. But our tools are often so embedded in who we are and what we do that they go unnoticed. Two of our greatest tools relate to communication - our spoken languages and our ability to communicate through writing. Both help us think and express our thoughts and feelings and both enable us to act, perform and achieve in the many domains of our life.

Creative Academic Magazine itself is a tool, in the form of a media vehicle for enabling people to communicate and share their perspectives and practices on the theme of creativity. For the last 6 years we have given voice to hundreds of educators and other practitioners and through this enabled them to communicate their ideas with thousands of educators and practitioners across the world. In this way it's a tool for amplification. In the last six years we have explored many themes but, surprisingly we have not devoted an issue to the topic of tools and frameworks for creativity so it was a real pleasure when Dr Kevin Byron stepped forward with an offer to host a discussion on the #creativeHE facebook forum on this very theme and then offer to collate the results of the discussion for the magazine.

As Kevin's biographic notes shows he has a special interest in these sorts of tools and frameworks and has drawn on them in his own practice as a teacher and facilitator, so there can be few people as well qualified as he is to facilitate our exploration. Physical and conceptual tools extend our abilities to think and act in the world and as a result have the power to transform our perceptions of ourselves in the world and our understandings of how it works. I hope that the tools and frameworks provided here, together with the shared experiences that give them meaning, encourage the reader to try some of them out for themselves.

As we were assembling the magazine in November, Kevin made a post which made reference to a tool that revealed the diversity in the way creativity is defined. A few words in a few boxes generated over 36,000 definitions of creative behaviour. It triggered a thought – what is the value in defining creativity? And my post generated another interesting discussion in which a number of tools to aid thinking about creativity were used. So we have included this discussion also in the magazine as it illustrates well how tools prompt questions, inquiry and analysis and ultimate generate new tools or the adaptation of existing tools to help us communicate ideas.

A great big thank you to Kevin for facilitating the discussion and collating the results and to everyone who contributed to these conversations by sharing their perspectives and experiences. I have often said that we are the curriculum—we determine what it is we want to learn and set about exploring it for ourselves and then through the magazine—we share what we have learnt in an open and accessible way. This is our small gift to the wider community of people who value and who are interested in creativity.

Norman Jackson
Commissioning Editor

HAPPY BIRTHDAY CREATIVE ACADEMIC

It's the start of another year which means that Creative Academic is another year older. When we launched our enterprise in January 2015 our goal was to try to create a focal point (or hub) around which people who were interested in creativity in higher education and beyond, could connect, explore ideas and share experiences, practices and resources. We produced the first issue of our magazine in February 2015 and since our launch we have produced 27 issues on many different topics.

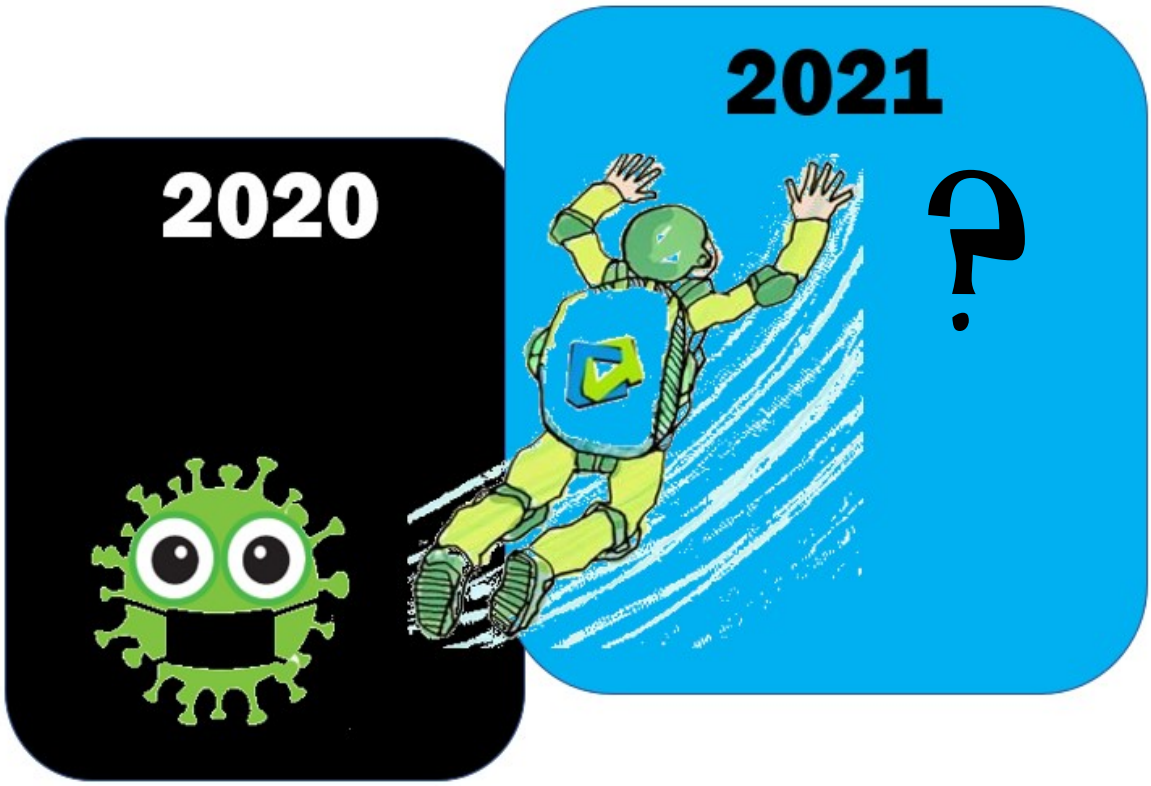
The work of Creative Academic has benefited greatly from co-founder Chrissi Nerantzi's #creativeHE forum which she initially set up on Google+ and then migrated to facebook when google closed down Google+. The forum provided an opportunity for asynchronous discussions and we recognised that there was much wisdom and useful knowledge and resources in such discussions so Creative Academic took on the role of curating the more substantive discussions in our magazine. In this way we act as the voice for our communities of interest and facilitate spread of ideas and practices.

From a small group of friends who shared this vision our network of interest (subscribers) has grown to over 600 people from many countries including - Argentina, Australia, Austria, Canada, China, Colombia, Denmark, Ecuador, Egypt, Finland, France, Germany, Greece, Hong Kong, Hungary, Ireland, Korea, Malaysia, Marshall Islands, Netherlands, Peru, South Africa, Sudan, Switzerland, Taiwan, Tanzania, UK and the USA.

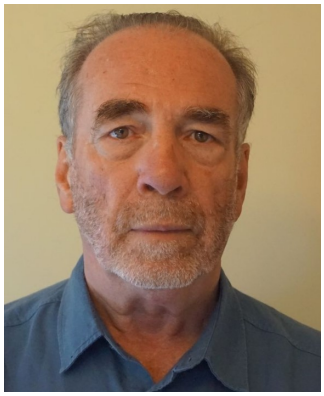
Our magazine enables us to explore the many dimensions of creativity in educational and other practices and everyday life. In the last year we produced three substantial issues and our collection of magazines has now been accessed on-line nearly 12,000 times.

In 2020 the pandemic caused disruption, misery and loss of life all over the world. As we come to the end of the year there are hopeful signs that we will soon have a vaccine and we can look forward with more optimism to the year ahead.

Professor Norman Jackson
Founder Creative Academic & Facilitator #creativeHE



My Story of Creativity and Me
Kevin Byron



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 a research skills developer, and then at Queen Mary University of London as an 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 over 150 academic papers and patents, and contributed to a number of book publications on his earlier research interests, and more recently on innovation and creativity. He is a member of the Creative Academic Team and an active member of the #creativeHE community.

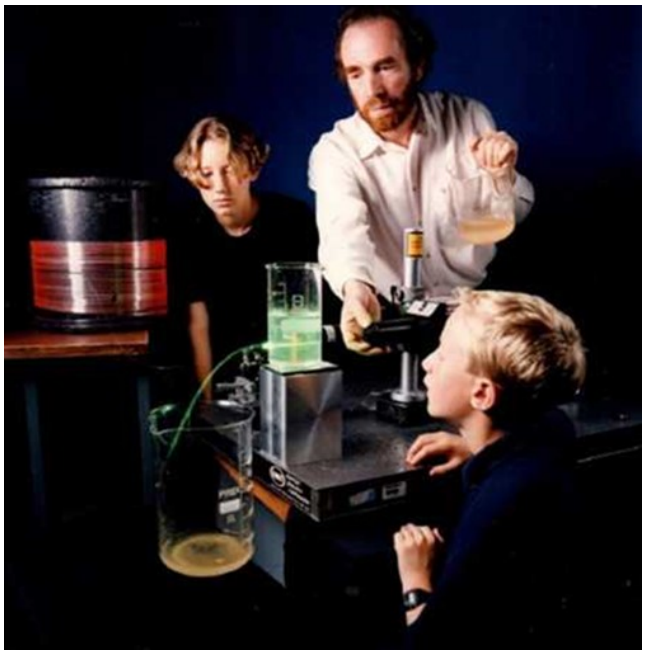
It's always fascinating to hear an individual's life story and how they became interested in creativity and how they developed their particular understandings and beliefs. In this article Kevin shares his story of his involvement with the idea and practice of creativity.

Awakenings

Before I began researching creativity in education in the late 1990's, whilst working in telecommunications research, I was pretty sure I knew what being creative felt like, but I had no idea what it actually was. Words and their usage are subject to changing fashion, and the term 'creativity' had only become more commonplace outside of education at the turn of the century. To most people this is of little importance, because living a creative life is not at all dependant on knowing what we mean by it. That's not to say it can't help having a better understanding, and in education of course it is essential to understand the tacit connection between these two things.

Working in science isn't often viewed by the public as a particularly creative endeavour, given that most of it is presented as painstaking, repetitious experimentation carried out by people in white coats. However - unlike in the imagination of a practitioner of the arts, where all is possible - in the physical world most things are not possible, and neither are they inter-connected to anything like the extent to which the more 'creatively-spiritual' minded folk would have it. To solve problems and find new knowledge in a world limited by just a few immutable laws and many practical constraints, requires a great deal of ingenuity.

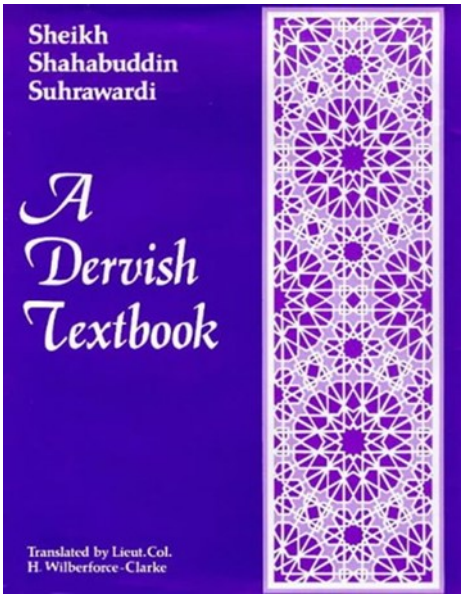
In spite of living creativity in my work, I can't say I had any idea on how it could be nurtured in myself, let alone anyone else. I'd taken it as one of the requirements of my profession without reflecting much on the vagaries of its operation. This all changed when I started reading the book 'The Act of Creation' by Arthur Koestler. His emphasis on bi-sociation (the combination of two or more disparate, but already existing ideas) as the basis of creativity, irrespective of whether that led to a new invention, an art installation or even to something humorous, resonated strongly with me. Whilst in industry, as well as publishing papers on my research, I had filed quite a number of patents based on the technologies I was working with, and I was now able to clearly identify the creative act in them.



Some of my research involved collaborative work with universities funded by various government schemes, and following the conferment of honorary visiting lectureships by the universities of Glasgow and Salford, I acquired a passion for teaching. Whilst doing research, additional teaching opportunities also arose when I volunteered to support the company's outreach programme. I initially gave presentations to local schools with the aim of inspiring younger people about science, and this involved inventing some novel demonstrations to show the principles of LASERS and optical fibre communication, an example of which is shown in Figure 1.

Figure 1 Using a water spout to demonstrate total internal reflection in fibres.

I continued with this two-stranded career of research and education until 2002 during which I received an award for my collection of patents, and in the late 1980's I also started a business in my spare time at home after identifying a gap in the market of LASER machining. In brief the technology at that time for cutting, etching and



drilling solid materials, was based on large mainframe LASERS mounted on heavy-duty gantries. All I did was scale everything down, and build the first desktop sized computer controlled LASER machining system. However I didn't feel I had the business experience to go into production with these machines, and given that the country was now going into recession, I wasn't prepared to take the financial risk. Instead however I explored what I could do with this unique machine, and got into a 'side-line' business of designing and producing LASER cut decorative stencils. These artefacts were highly fashionable for home décor at the time, and the nearest I got to turning this project into a business was when I hired a stall at Covent Garden Craft Market in London, and at the weekends I marketed my designs there. Miniature LASER machining systems are commonplace now, and cost just a few £100.00.

Interestingly, a year later this technology landed me the first prize of £10,000 in a national competition for 'The Most Innovative use of Computer Aided Design'. This was for a project in which I used the LASER to cut through coloured masking film whilst leaving the substrate intact. I had been asked by a publishing company - Octagon Press – if I could design and produce lithographic stencils for their jacket designs of books on Eastern Philosophy. The result of one of these designs using this technology is shown in Figure 2.

Figure 2 Octagon Press book jacket design produced with LASER-cut masking film.

In the mid 1990's as the Internet became established, more and more of the research at the laboratories was becoming commercialised, especially since we had been bought up by a large international corporation (Nortel Networks) based in Canada. By this time I was managing a small team, as well as being involved in multiple collaborative projects. We were working on a new line of research in which simple holograms were being written into optical fibres, which offered practical functions like filtering and equalisation in actual systems.

The pull of education

On the educational front my private studies in creativity were helping me to broaden my work with schools, and I made the transition from giving straight lectures, to facilitating workshops on creativity in science. This culminated in something I called: 'The Invention Adventure' in which the schoolkids worked in groups to invent, and make a mock-up of some kind of gadget, which they then marketed in a school trade fair. The creative skills focussed on imagining through visualisation and combining. This workshop became very popular with local schools, and at one stage I was presenting it to an entire year as shown in Figure 3.

Figure 3 The Invention Adventure at 'The Herts and Essex Girls School', Bishops Stortford.

By 2001 with the dramatic growth in telecommunications, the corporation underwent massive expansion and I was under pressure to reduce my work with schools. However I had become more interested in creativity in education, than in my main job of telecommunications research, and I was restless for a big career change. Fortunately for me a BBC producer had seen my work with schools when I presented a workshop at the science museum in London and - unknown to me - she nominated me for a 'National Endowment for Science, Technology and The Arts (NESTA)' fellowship. This was in the early days of NESTA when fellowships were awarded to individuals to work in any area of their choice provided it demonstrated creativity. When I received an application by post to apply for a fellowship, I ignored it at first. This was because the maximum funding of £75k over three years - though generous - was nothing close to my current salary in research (which also included other perks such as a company car). I was in a quandary though because my heart was now set on a role in education. Fortunately for me, fate intervened because in October 2001 we were informed in the laboratories that the UK part of Nortel was to close down by Christmas. The entire staff of the laboratory were made redundant, and this was later followed by a collapse of the entire global corporation. The reason for this was politely stated in Canada's 'Globe and Mail' newspaper as due to 'credibility problems'.

I must have been the only person jumping with joy when the announcement was made because having served there over 25 years, I would now be financially secure enough to go ahead with the NESTA fellowship. I immediately applied for the fellowship with a proposal to develop and present creativity workshops in science for primary and secondary schools. My external assessor for the proposal was the late Anna Craft who made a great contribution to the UK 'Creativity in Education' agenda when she was based at The Open University.

The proposal was successful, and I began the fellowship in January 2002. This gave me the opportunity to research and design more resources and to present in various UK schools. During this time I partnered with the Hertfordshire branch of SETNET which was an agency placing specialist educators like myself in schools. I was also awarded funding from the Welcome Foundation in partnership with SETNET for a new creativity workshop which I called: 'From Biology to Technology'. Here, the school-children learnt about analogies through bio-mimetics, and came up with novel inventions based on mimicking biological mechanisms they found in nature, or through studying certain mechanical features that various creatures had evolved. An example of some the outcomes for this workshop are shown in Figure 4.

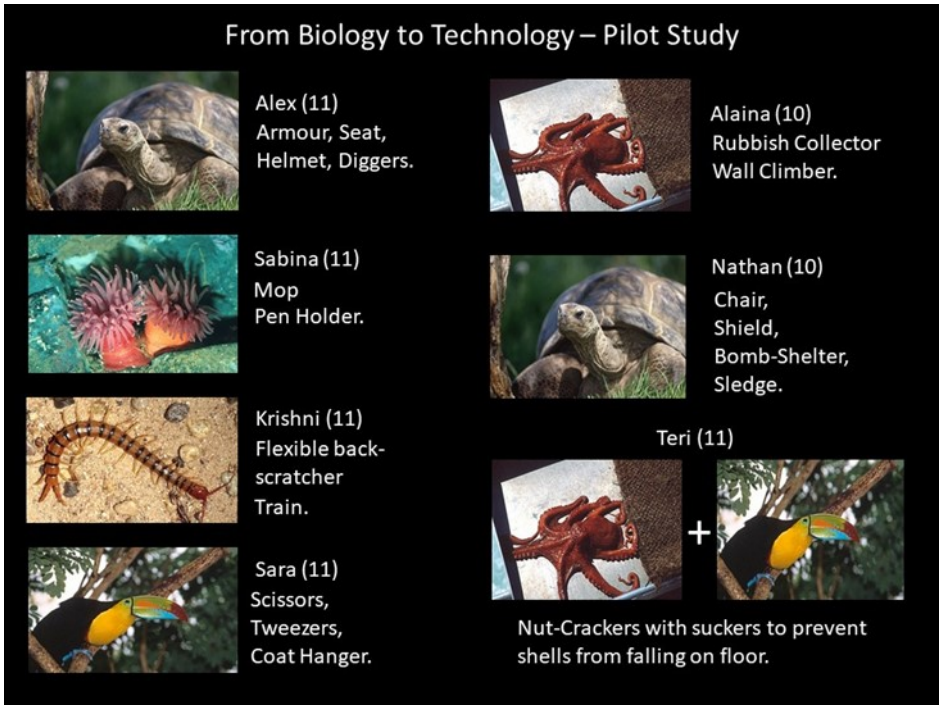


Figure 4 Some outcomes from a pilot study of 'Biology to Technology'

On completion of the three year NESTA Fellowship in 2005, I continued working with schools on a freelance basis, but I had already become more interested in creativity in higher education. After hearing about Norman Jackson's work in this area for the LTSN and HE Academy, I signed up to his listserv exchange called 'Imaginative Curriculum' and was active in the daily discussions. This opened the door to further opportunities for me through a connection with Professor Tina Overton who was director of the Physical Sciences branch of The Higher Education Academy (HEA) at Hull University. I began presenting workshops in creativity in education at a number of HEA conferences, and in 2006 I was awarded funding to develop a complete teaching resource on entrepreneurship for undergraduates. The outcome of this was a CD called 'Journey of an Idea' and this was distributed to many universities in the UK.

During this period I had attended a number of international creativity conferences, and given presentations and workshops on my work in creativity at most of these. This widened my network considerably, and for several years I was active in on-line discussions with the 'Creative Skills Training Council' set up by Ralph Kerle in Australia.

In 2009 I took up a full time post at the University of Leicester, where I worked as a research skills developer providing training to Ph.D students. Part of this work included an exploration of creativity in research, and this led to a commission by Vitae to author a booklet called 'The Creative researcher' (Figure 5). I also managed to conduct research on creativity in some of my workshops, and identified some of the issues in group brainstorming through using a technique for real-time reflective practice.

Figure 5 Ph.D booklet commissioned by Vitae

I then took up a post at Queen Mary University, London where I was employed as a research skills and enterprise developer. My earlier work with the HEA on entrepreneurship was now combined with the work I developed at Leicester. During this time I was also doing quite a lot of freelance work in creativity with a number universities and private companies, and so in 2012 I left the university and returned to a freelance role. I have remained busy presenting workshops on-line during the quarantine period, and am currently developing new 'self-tutoring' resources on creative skills. This is driven by the fact there is a shortfall in the 'human communication bandwidth' in on-line teaching and training. In my view this technology can only work if a 'flipped classroom' approach is adopted. This means providing the students with self-tutoring exercises that they practice before an on-line session, which is then used more as a Question and Answer session. Having conducted two sessions using this approach with a self-tutoring resource on 'Writing for Journal Publication', I'm currently developing a similar resource on 'Creative Problem Solving' for a company based in Cork, Ireland.

Thanks to the #creativeHE Facebook Group facilitated by Norman Jackson, I am also able to continue networking and exchanging ideas on creativity with a global community. It's worth emphasising that the history of my work with creativity described here, has mirrored my other work in research which has always been focussed on practical outcomes. This is also echoed in the content of this special issue of the CAM magazine, which would not have been possible without inputs from this interactive network, and I trust that the content will be also be of practical value to the readership.

“Creative Frameworks, Tools and Techniques!”
Kevin Byron

The aim of this series of discussions is to explore and share with other members of the #creativeHE community, some practical aspects of the design and content of an event/workshop for nurturing creativity with a group of people. Rather than simply exploring the nature of creativity, the idea is to consider the constituents parts of an event/workshop in which the attendees identify a real challenge they are facing that needed some creative thought and ideas to help meet it.

A number of discussion sub-themes representing these constituent parts were identified initially and these are listed below. For each of these items, a short illustrated essay was provided by the author, and comments were made by members of the #creativeHE community in response to questions posed on each sub-theme. The sub-themes provide a structure for this magazine as well as the structure for the conversations. In some cases the sub-themes were further divided into two or more parts as shown below:

Frameworks for Creativity

The quotation in Figure 1. is one of the conclusions drawn from a research study comparing the level of creative engagement in a number of different private businesses. The same message applies to educational organisations, and this is also equally applicable on replacing the words ‘be more creative’ with ‘use your imagination’.

The full report can be found at: https://landing.adobe.com/dam/downloads/whitepapers/55563.en.creative-dividends.pdf

Figure 1 Creative Frameworks.

Building on that thought, the idea here is to share creative frameworks, tools and techniques that members of #creative HE use, or have used as part of their teaching and learning, in which there is an underpinning aim to nurture creativity in the students with some practical end result in mind.

The scene for the first conversation within this theme, was set by an extract from a recent essay by Caleb Femi. Here he reflects on the fact that the disruption to education arising from the recent pandemic, has led to a great deal of uncertainty and worry for students with regard to their future:

"As a student you then question yourself - do I have the tools that are required to survive in this society? These tools are problem solving, creativity, innovation, the autonomy to envisage a new possibility and a new future. Also, the mental dexterity to make careers for yourself and make society a more efficient place, a more equal place for everyone. Tools that you need to have to survive in such an uncertain landscape don't match up."

Caleb Femi (The first young people's laureate).

For the full essay see: https://www.bbc.co.uk/news/world-53082188. Based on this the following challenge was set for the first sub-theme within this over-arching theme:

Q1: Imagine you have at last been given the time and space to design and present a short course (of your own chosen duration), which aims to address the problems that Caleb Femi has identified. How would go about it? What would the overall plan look like? At this stage the idea is to share the general approach or design (in words and/or images) rather than any specific aspects of the design.

The course could have any desired outcome (underpinned by creativity and imagination) related to Femi's concerns, such as a more enterprising mind-set, a greater capacity for learning, an improved ability to solve problems, greater creative skills, a better awareness of their own talents and skills, etc! (No assumptions are made about the group you are working with such as age, gender and specific interests).

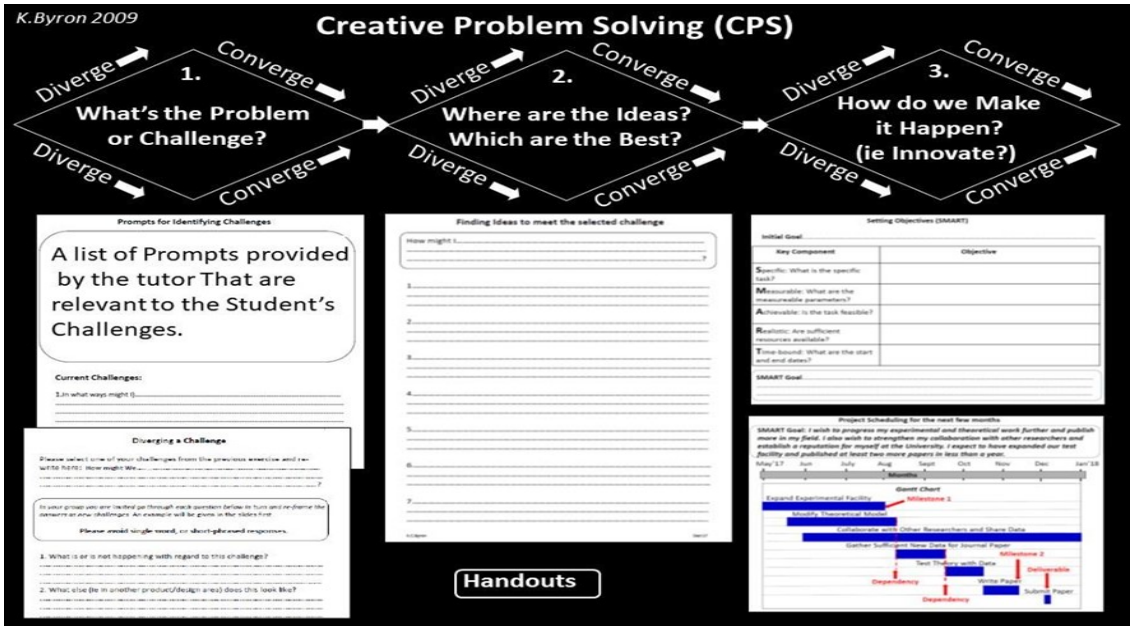
Comments and Discussion

Kevin Byron: Sid Parnes developed one of the first formalised frameworks for Creative Problem Solving (1), building on the earlier work of Alex Osborn (2). The original design consisted of six separate steps, and each step had two stages of 'diverge' then 'converge' as symbolised by a geometrical diamond shape. This framework has been widely adopted and adapted by many organisations and educational establishments world-wide. Some of these organisations developed a commercial version of it such as 'Thinkx', and others such as 'CREA Conference' in Italy changed the terminology into 'Thinking Skills'. My own adaptation of this framework is illustrated in Figure 2 below, in which the number of steps have been halved. This framework has been used as a design basis for a variety of different creative skills training workshops from enterprise to Problem Based Learning (PBL) presented by the author.

Norman Jackson: This looks like a really interesting topic for conversation Kevin Byron and I hope that a good number of our community will share their ideas, experiences and practices.

Kevin Byron: I hope so too. There's a wealth of knowledge in this group with a shared passion for creativity in education. It will be really useful for all to share our different approaches past and current.

Figure 2 An adaptation of Osborn-Parnes CPS.



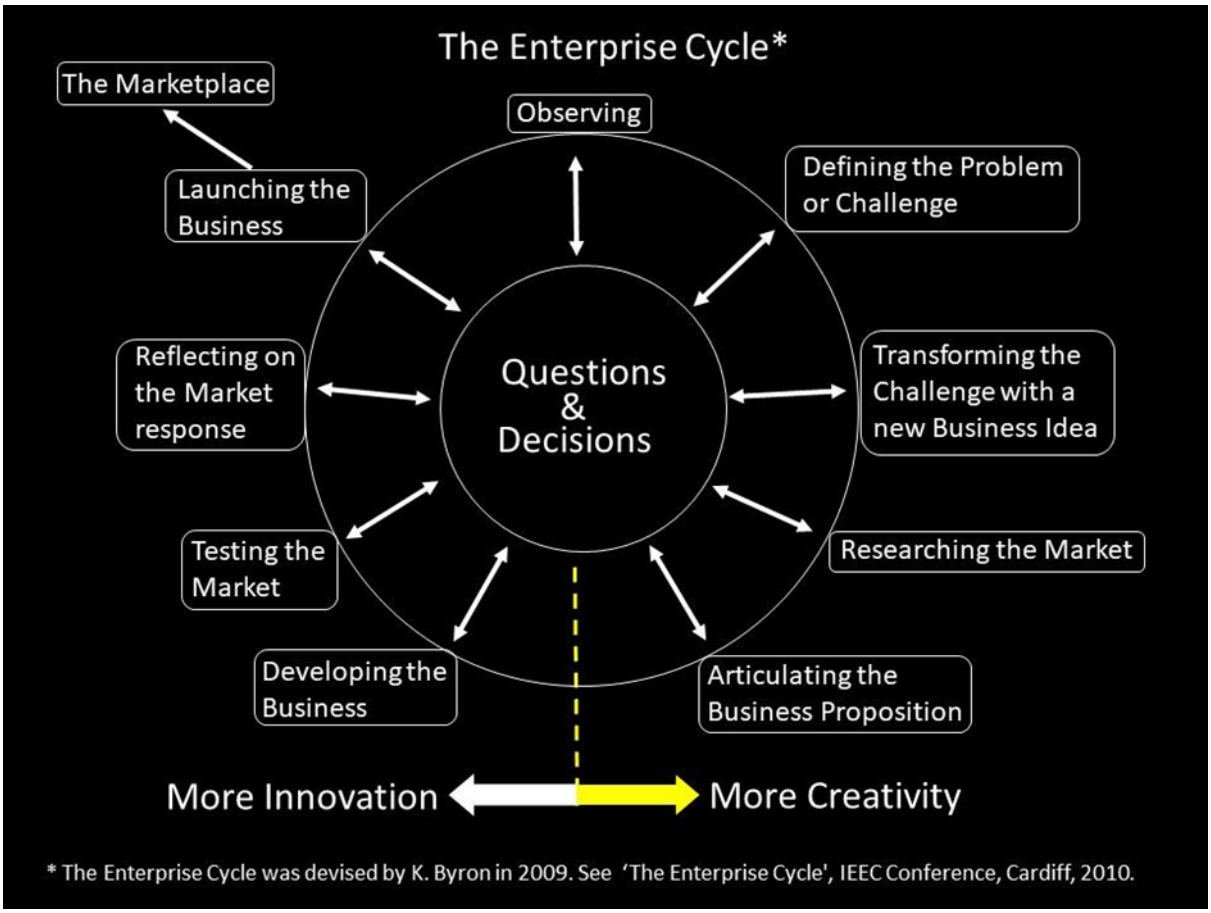
Kevin Byron: 'The Enterprise Cycle' shown in Figure 3. below is a framework that has been used to help budding entrepreneurs develop creative ideas for a business, based on an initial observation of a gap or discontinuity in a market (3). Progress around the cycle is nominally clockwise starting at the first step of 'Observing'. However business development is rarely linear and predictable, and often one needs to be able to go back and forth to earlier steps in the process, in order to make overall progress. In 'The Enterprise Cycle' this is accommodated by returning to the centre at each step where different creative questions are asked, and decisions made. Entry into the cycle can be at any step depending on how far an enterprise has progressed.

At each step in the cycle different resources are required and a series of prescribed questions are asked (provided in separate handouts). If the questions are answered satisfactorily and the resources are in place, progress can be made to the next step. The right hand half of the cycle involves more creative thinking than the left, and is low risk. In the left hand part of the cycle more innovation is required (ie putting ideas into action, planning and setting up the business). Funding is required to progress through this part of the cycle, and for many businesses this can be kept at a low level before reaching the 'Launching the business' step. At any stage in the process of course, especially in the left hand half there is an option to stop if the idea does not appear to be viable.

This cycle has formed the basis of a number of training programmes developed by the author for both undergraduates and postgraduates. It has been presented at several UK universities, and at The National Science Centre in Warsaw in 2017.

Frameworks don't need to be included explicitly in the delivery of a course, but they provide a practical template for the teacher to design the whole programme.

Figure 3 The Enterprise Cycle.



Marta Davidovich: I appreciate your introduction of entrepreneurship to this conversation Kevin Byron. It is a very important topic to address at this time in history and moving forward. There are many models of this type that are, as you mentioned, based on the classic CPS cycle that originated in the 50's. That model has been growing and developing since that time. The current moment does call for nonlinear models (as you mentioned). Also needed are work-from-home models to prepare us for massive job loss in all business sectors. Post-COVID, I believe we all will need to pay increased attention to sustainability, environmental impact, inclusion, and developing soft skills focused on increasing human employability in the decade ahead as non-human (robot, AI, machines) replace data driven, manufacturing, and service related positions. We are living in a time where classic entrepreneurship models also need to embrace the growing need for training and supporting solopreneurs, lifestyle entrepreneurs, infopreneurs, and whole new categories of virtual educators destined to replace face-to-face learning. I believe imagination is central to all visionary models of entrepreneurship moving forward. This new territory also calls for non-linear adaptations designed with elements that constantly adjust to the evolving dynamics and disruptions in the world today.

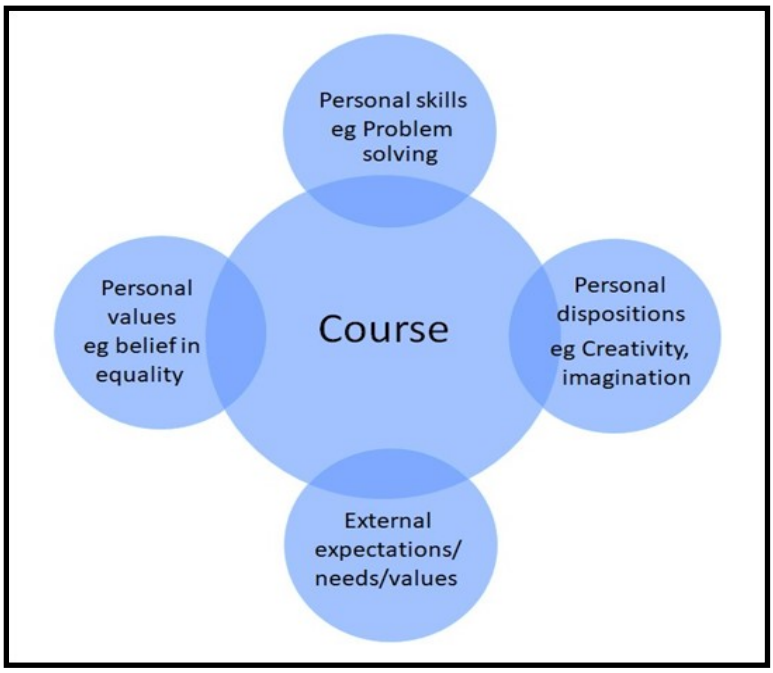
Kevin Byron: We have an expert on this in our group- **Andy Penaluna** - and I look forward to his comments on this important topic.

Kevin Byron: Marta - could you post any models that you have worked with? The idea is to have an archive of choices here that other members could draw on. Regarding CPS I'm aware that Gerard Puccio et al have modified it in recent years, but I was surprised when I attended the CPSI conference about 14 years ago that the Springboard programme was still teaching the Osborn and Parnes' process in its original form. I assume it has been updated now?

Jennifer Willis: Thank you Kevin Byron for this interesting task and the examples of templates traditionally used. I found myself immediately feeling that the prescriptive nature of these was too constraining and lost the vitality of Caleb's vision of what was needed for the future. I therefore went back to his dilemma, in order to identify why he described it 'not matching up'.

The problem seems to be a fundamental one of values/expectations rather than of skills or dispositions. I tried to capture this in a very simple image in Figure 4. of what the course would need to bring together. This is my starting point - hope it's not too simplistic!

Figure 4 Components of a Course.



Kevin Byron: Jennifer - thanks. I am curious as to how teachers plan their courses, workshops and experiences that include creative skills etc without some frame of reference. Creativity per se is not much use to anyone, and I'm assuming when it is put into some kind of practical context, there is some kind of sequence in which the student is guided along the way to exploring their creativity and imagination. As the quote in the slide stated: 'asking people to be creative ...' isn't enough!

Jennifer Willis: Yes Kevin Byron, there is a guided sequence. I usually start with a stimulus that is customised to appeal to the individual or group, often an image or a scenario. This is followed by discussion and explanation of my assessment criteria (!!!). We may co-create, depending on the ability, age etc of the group. I am just off to teach creative writing for the next 2 hours, and plan to write about this is more detail for Lifewide magazine.

Norman Jackson: It's a good idea to explore and frame/reframe the problem/task Jennifer Willis I don't like the idea of 'course' perhaps experience or 'edventure' is more useful for your design framework? Do you remember SCEPTrE used the term Academy to avoid the idea of a course?

Jennifer Willis: Yes, Norman Jackson, you are right - I was seeking something more experiential so an alternative to 'course' would be good. Essentially, I have put experience above pre-determined objectives, which is, of course, highly contentious! I guess my teaching is underpinned by a belief in stimulating interest and a desire for learning, based on the assumption that once that has been developed, more focused study/work can ensue.

Kevin Byron: I understand the concerns regarding 'course' but I had to choose a term that would be familiar with everyone here. Personally I don't like the term 'training' either as it sounds like conditioning!

Andrew Penaluna: I recall Kevin's diagram presentation at IEEC 2010 as I just so happened to have co-chaired the event... blimey Kevin, 10 years ago! A problem we also face I think is translating... in Kevin's case it was for an audience of business educators predominantly, who knew very little about creativity and were calling for road maps to help them - so these kinds of models certainly have their place. I am in the middle of writing about how the 'crit' works in art and design assessment, for the same audience, and it is still a tough call.

Kevin Byron: Yes how time flies Andrew! - you did a great job with raising the importance of enterprise in the UK, and working with policy-makers too! As a result, rather that it being viewed as an add-on skill in universities it is now regarded a viable career path.

Jennifer Willis: I wonder Andrew Penaluna if the problem is not just linguistic but also cultural translation? Do models transfer easily from one culture to another? Should they? Deep ethical questions!

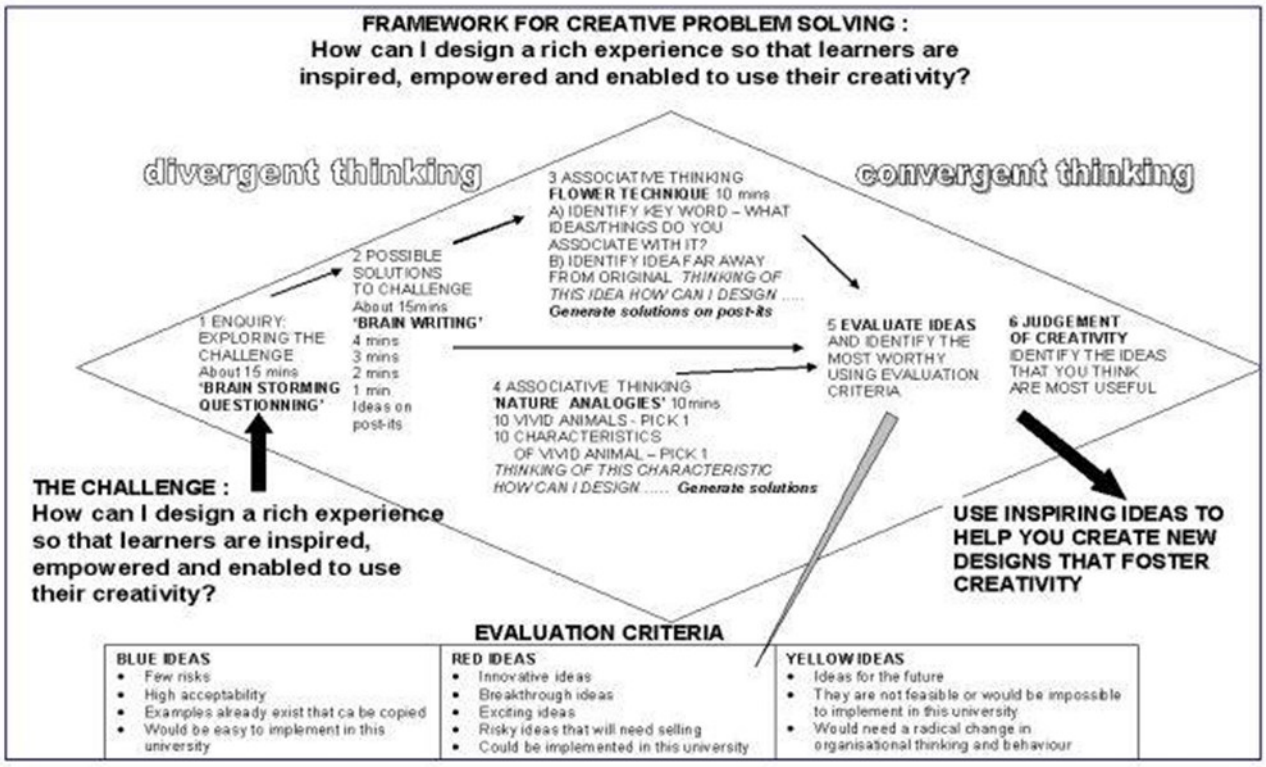
Andrew Penaluna: Yes you have a point Jennifer, and when I was doing the UN and Balkans work I often had to bite my tongue until I'd asked a few questions. A lasting memory in Montenegro includes trying to pull apart two arguing colleagues from different ministries... they both turned and said, "chill Andy, this is how we find alternatives without guns"!!! - I duly chilled

Norman Jackson: Good question Jennifer Willis I have used the same 'design thinking' workshop in an educational context in many countries including China and Saudi Arabia and it seems to work as a process in spite of language difficulties. There may be value in sharing such practices in the explicit knowledge that these are practices developed within a western paradigm of what creativity means. I wouldn't use the term 'easily' I would say it has to be done with a degree of flexibility, sensitivity and cultural awareness.

Norman Jackson: While working at SCEPTrE (University of Surrey) we developed with Fred Buining (a professional facilitator) a framework shown in Figure 5. for encouraging workshop participants to use their imaginations to solve relevant teaching problems. As mentioned above, I tried it out in several different cultural contexts and it seemed to engage participants in a collaborative thinking and doing process that, from a teaching perspective, achieved good outcomes.

Figure 5 A Framework for Creative Problem Solving

https://www.creativeacademic.uk/.../__creative_academy.pdf



Kevin Byron: Thanks Norman - that's useful, and hopefully you will unpack the various stages as we go through them later in this conversation.

Paul Kleiman: I think what is sometimes missing from discussions like this is the vital role the designer and 'good design' plays in all this. Being a great teacher, researcher, etc. does not necessarily make a good designer. There are recognised principles of good design (OK, people argue about them, but at least they exist!). My take on them, in regard to curriculum design, is here:

https://www.researchgate.net/publication/238709657_Design_for_Learning

Andrew Penaluna: Perfect timing Paul - I am writing on that very topic at the moment - because many business educators think that Design Thinking Models are all there is to it.

Norman Jackson: But conversely Paul Kleiman, Andrew Penaluna it doesn't matter how 'good' the design is if the teacher/facilitator lacks the skills and understanding to enact the design in a way that is meaningful to learners/ participants. Even good designs may have to be adapted and improvised in the moment.

Andrew Penaluna: Absolutely Norman, and it is that flexibility that isn't too well enacted in Design Thinking models. Design educators use their multidisciplinary approaches to teaching too for example, and most have learned it through practice, not just theory. Matlay and Carey did a review of job ads - for business education and for design education. Their findings showed an exact contradiction - design wanted experience in 82 per cent, whereas business wanted a business PhD in 82 per cent!

Paul Kleiman: Coming in very late to this but the conceptual framework I developed has been used by a number of academics to assess/evaluate creativity rather than design for creativity. But perhaps it could be utilised/ adapted to be a design tool. Two examples are:

https://bit.ly/3jngWP4

https://usir.salford.ac.uk/id/eprint/19282/2/Keegan_Bell_Creativity_and_OER.docx.pdf

In Praise of No Frameworks!

The first discussion was on creative frameworks, methods and processes that could be used as a basis to design a 'course' (for want of a better word) aimed at addressing an unprecedented challenge brought about by the Covid-19 pandemic. The challenge was summarised by the earlier quote by Caleb Femi.

Some people baulk at the idea of a framework, and prefer a more organic approach to designing and presenting courses, and it's interesting to enquire how this challenge would then be approached.

I would argue there is always some form of structure or recipe in operation in the background, whether it's made explicit or not. By analogy we can't bake bread without a recipe, though of course when we are very familiar with the recipe, we don't need to refer to it.

To an uninformed observer it might look impressive that there is no recipe, and the baker is not even weighing out the quantities! When asked how they do it, the baker might reply that they rely entirely on their intuition. This much abused term has acquired the status of magical thinking in recent years through its associations with various forms of 'New Age' philosophy.

Intuitive skill is always hard-earned, and anyone who has gone through the painful process of learning to drive a car can confirm that. It starts off as a clumsy mechanical process of logical steps, and clunky hand-eye-foot coordination. With practice however these various uncoordinated actions become joined up, and sublimated beneath conscious thought, so that the mechanics of driving becomes a smooth, coordinated process - ie intuitive!

Back to education! - an interesting and important example for which there appears to be no explicit framework, is in 'doing science' or more formally 'conducting scientific research'. It's hard to believe this at first sight given that science is founded on logic, reason and procedure (and of course creativity, without which there would be no progress). Not only do most scientists I have worked with and taught, not follow an explicitly formal process, they are also not aware of 'The Scientific Method' which surely is a framework!

Over a period of several decades of working in science, and with scientists, I must have asked (as part of presenting lectures and workshops) many hundreds of researchers the question: 'What is the scientific method?' and typically only one in thirty has an answer, and more often than not, that answer is incomplete.

The method of investigation into the material world known as 'The Scientific Method' has been identified with the works of Bacon, Galileo, Newton and Descartes in Western Europe in the 17th century. It is a synthesis of modes of thought, procedures and techniques that had been developed earlier, and in other cultures. It can be generally stated using current terminology as a procedure with the five stages listed in Figure 6.

However whilst this method highlights the main steps in the process of undertaking scientific investigations, it gives no clue as to how to execute these steps, and how to move between them.

The question remains then, if most scientists are not aware of the framework called 'The Scientific Method', how do they proceed in their amazing research endeavours?

Alison Gopnik - an American professor of psychology at the University of California, Berkeley has the answer to this in her book: 'How Babies Think'(4). She and her research team studied the behaviour of babies and young children, in order to identify how they solved 'open-ended' problems, and a very similar process to aspects of 'The Scientific Method' was observed. They were confronted with a problem, and tried to find a solution. If that didn't work, they tried another approach, until eventually they solved the problem.

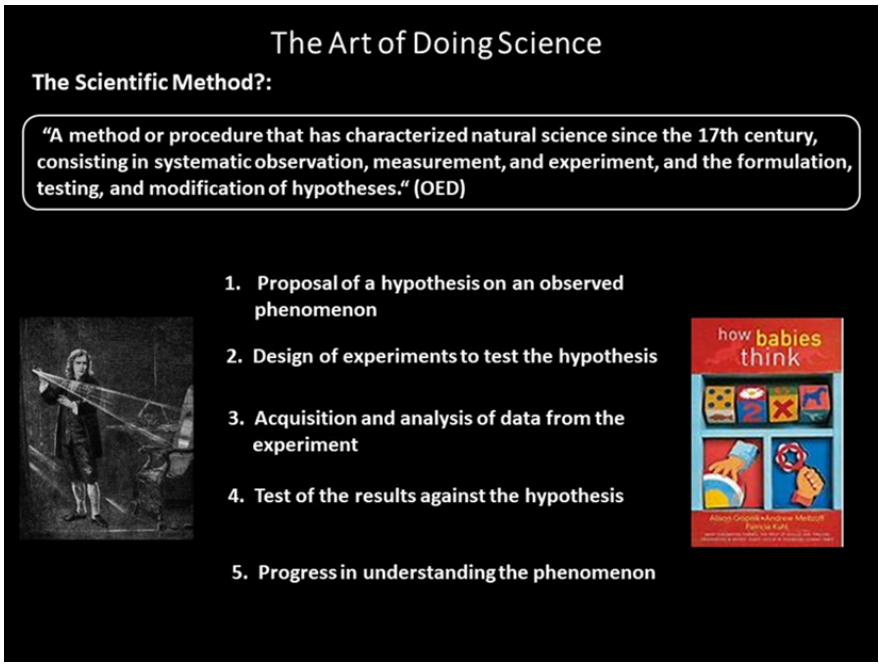


Figure 6 The Scientific Method

On the face of it this looks like trial and error (and this sledge-hammer process is still alive and well in science, at times when there are initially too many dependent variables), but over time as experience with earlier solutions is accumulated, short-cuts are found for solving future problems.

This accumulated experience is sublimated, and is this precisely the nature of intuition. In her book Alison Gopnik refers to babies as scientists because they are actually doing research and not in a random way.

So by the time a person has reached their teens, they will have encountered many different kinds of problems and learnt a lot of short-cuts, and whilst the majority of these problems are not scientific, the underlying process is the same. The reason then that a budding scientist is ready-made to do science, is because they are already equipped with the appropriate skills to tackle any kind of problem in a methodical way, and these skilled are honed further through a variety of critical thinking exercises which are embedded in conventional education irrespective of the subject. Of course the other important ingredients of knowledge and conceptual understanding are also essential to becoming a researcher.

Q2: Returning to the current challenge provided by Caleb Femi (see earlier), the question still remains with regard to people who prefer no framework: Can the tacitly known stages required to design such a course, be articulated? Or is the intuitive knowledge embedded so deeply that one could comfortably appear to present the course in a kind of improvised way? If so this does beg the question about resources, what is needed, why, and in what order?

Comments and Discussion

Paul Kleiman: There are similarities, as Kevin points out, between the Scientific Method and the design process. The main difference is that the Scientific Method tends to imply a linear process, while, as Brian Lawson pointed out in his seminal book How Designers Think, it is far more interconnected, interrelated, iterative process. Here is a slide (Figure 7) from one of my presentations on design principles.

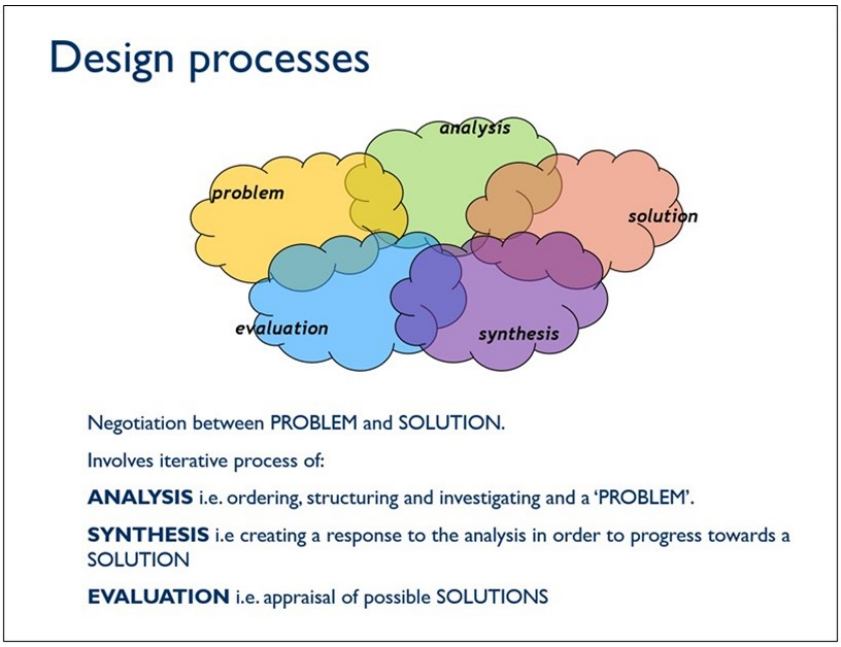


Figure 7 Design processes.

Kevin Byron: It's probably a good thing that most scientists don't know what the scientific method is, because they would be limited to a step-by-step procedure. However nothing could be more non-linear than creativity, and without it science would grind to a halt!

Jennifer Willis: In response to Kevin Byron and Paul Kleiman, would it be fair to say that one big difference between the scientific method and the design process is that the latter sets out with a goal in mind, whereas the scientific method may not necessarily have one?

Paul Kleiman: Hello Jennifer Willis, not sure about that. Surely the 'proposal of an hypothesis' implies a goal in mind. You might end up somewhere completely different. Same goes for the design process.

Kevin Byron: The hypothesis is a kind of educated guess, and many Ph.D students prefer to venture only as far as asking a research question, rather than speculating on a cause - but I agree there is usually an end goal.

Jennifer Willis: Agreed Paul Kleiman, but some scientific discoveries are serendipitous, albeit that the scientific method was followed. That's why I said 'not necessarily' aimed at solving a specific question.

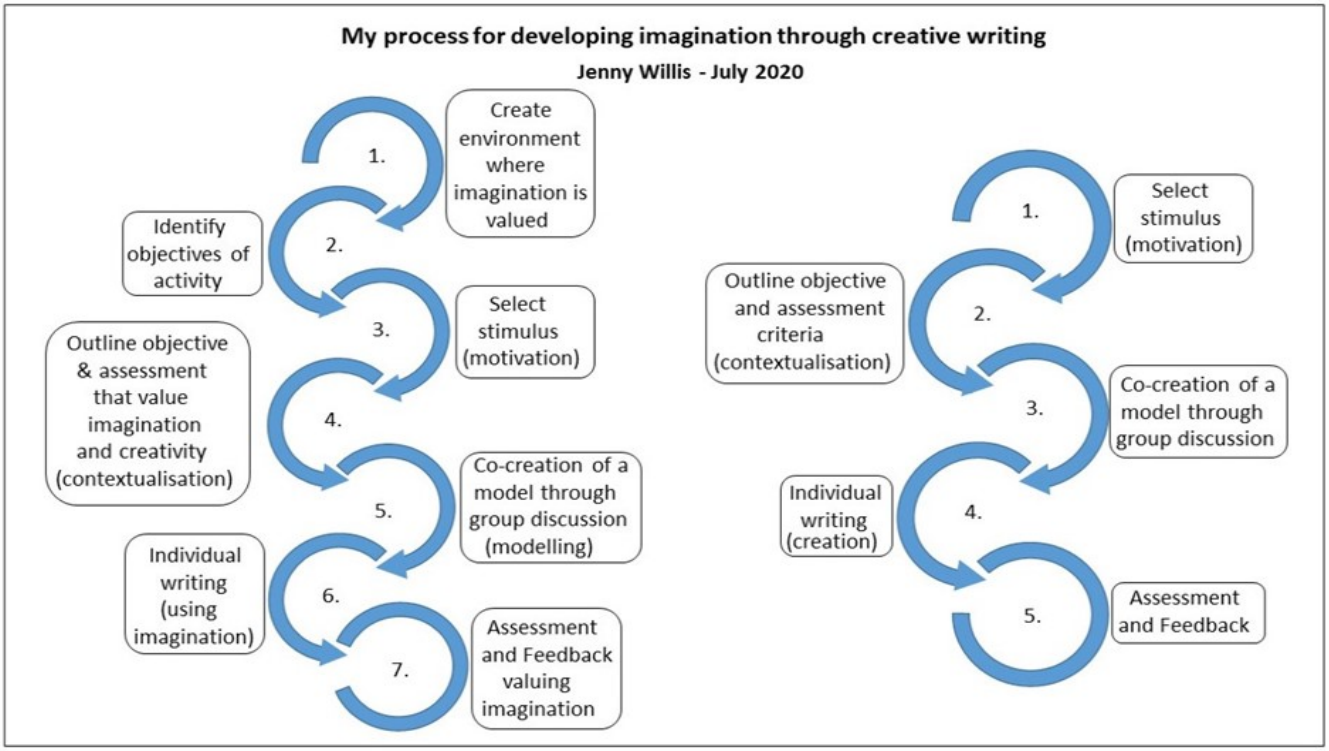
Kevin Byron: I would argue that all discoveries are accidental. No-one ever planned a discovery, and I don't regard a discovery as a creative act, though it requires a certain flexibility of mind to spot a potential discovery, as they often fly in the face of current thinking.

Jennifer Willis: My response to the question: yes, I would agree that, with experience, we learn to design and deliver learning experiences intuitively, but that doesn't mean we can't analyse and externalise the process.

Here is a basic analysis of how I go about teaching, applicable not only to creative writing (I am actually a linguist by training, not an English teacher, though that is what I am now doing!) Similarly, although I am using this implicit model with KS2 and KS3 children, I have also used at all other levels, including adults. (Btw, as a one-time AL with the OU, I DID know what the scientific method is!).

Although I have stopped the process in Figure 8 with evaluation and feedback, in reality it perpetuates into the next cycle.

Figure 8 Developing imagination through creative writing



Marta Davidovich: To equate intuition to magical thinking/NewAge/non-science in 2020 is unscientific.

Kevin Byron: I couldn't agree more, but many people do use the word 'Intuitive' inaccurately as if it has some magical dimension! There's plenty of evidence to suggest there's more irrationality in circulation at the current time than ever before! I would include in that, fake news, alternative facts and conspiracy theories. Even though science is based on reason, we tend not to think scientifically much of the time. Indeed a great deal of thought is not based on reason, but on emotion.

Norman Jackson: "I would argue there is always some form of structure or recipe in operation in the background, whether it's made explicit or not."

Yes Kevin Byron this has to be the case if any forethought has been given to the situation. The only case where this doesn't happen is when someone is thrown in at the deep end and is forced to improvise and as far as HE courses are concerned this does not happen. If they have any time at all to think about what they are going to do they naturally create a structure for themselves. It's the way we cope with uncertainty.

Norman Jackson: Kevin Byron if the question is teacher oriented ie teaching a course, the teacher will always create a framework and justify their design. If it is learner oriented eg imagine and implement a project, they will invent a design for themselves within the parameters they are given.

Jennifer Willis: Absolutely Kevin Byron. I have just experienced how the learners got so engaged in the activity that they took over my framework and made it their own.

The task had been to imagine they were archaeologists who discovered a new species. The species was an amalgam of 3 known animals/insects/fish e.g an elephant, butterfly and turtle. They had to name it, imagine its habitat and lifestyle and so on. They immediately wanted to change the parameters e.g. an be have more than 3? Can we draw it? (Remember, this was an English class.) I took this as an indication of their engagement and was happy to agree to their variations

Kevin Byron: What a great idea Jennifer - truly blended learning!

Norman Jackson: Perhaps École 42 (Figure 9) offers a glimpse of what a little or no framework educational experience looks like. The basic idea is to put up to 1000 highly motivated students into a single building with lots of space for social interaction, give them Apple computers with large screens and throw increasingly difficult programming challenges at them. The students are given little direction about how to solve the problems, so they have to turn to each other — and to the Internet — to figure out the solutions. All of École 42's projects are meant to be collaborative, so the students work in teams of two to five people. At first glance, the École's classrooms look a little bit like a factory floor or a coding sweatshop, with row after row of Aeron-style chairs facing row after row of big monitors. But a closer look reveals that the layout is designed to facilitate small-group collaboration, with the monitors staggered so that students can easily talk to one another, on the diagonals between the monitors or side by side with the people next to them. Students can come and go as they please; the school is open 24 hours a day and has a well-appointed cafeteria in the basement. Students share all of their code on Github (the world's largest open source platform and community). They communicate and collaborate with one another, and receive challenges and tests, via the school's intranet. Everything else they figure out on their own, whether it means learning trigonometry, figuring out the syntax for C code, or picking up techniques to index a database.

Figure 9 Ecole 49

Problem-based tests are essentially pass-fail. A team either completes the project or it doesn't. The no-teachers approach makes sense, as nearly anything you need to know about programming can now be found, for free, on the Internet. Motivated people can easily teach themselves any language they need to know in a few months of intensive work. But motivation is what's hard to come by, and to sustain — ask anyone who has tried out Codecademy but not stuck with it. That has prompted the creation of "learn to code" bootcamps and schools around the world. École 42 takes a similar inspiration but allows the students to generate their own enthusiasm via collaborative (and somewhat competitive) teamwork.

https://venturebeat.com/2014/06/13/this-french-tech-school-has-no-teachers-no-books-no-tuition-and-it-could-change-everything/

Marta Davidovich: I am fascinated by this project. Is there a way to follow or even 'observe' the live action on a real time basis Norman Jackson?

Simon Rae: I came across this account of a 'No Structure' course that was tried out at St. Martin's School of Art in 1969 (Figure 10). Looks like it was not a total success!

Figure 10 The year of the locked room

Art Colleges seemed to be able to experiment with their students like this. I started my DipAD Art College training in provincial Stourbridge the same year on a very structured, regimented course that taught me lots about technique but nothing about critical awareness … my next year in Nottingham was on a much looser, unstructured course with access to huge amounts of technical facilities that none of us got around to using. We all knew everything and nothing. I did learn enough to move into IT. See: https://www.tate.org.uk/.../issue-9.../year-locked-room

Kevin Byron: Summerhill School was based on similar principles where the student is at the centre of everything.

D**oug Cole:** In relation to my work, which is seeking to influence the curriculum design process at scale, there is a real need for some basic principles to be consistently applied. An appropriate framework is therefore almost a must, without one specific and important dimensions for learning may be completely missing.

I have to stress I am not talking about a restrictive, one-size-fits all formula here, rather guiding principles which are then contextualised in practice, at the course level and involving all key stakeholders. I have been testing and working with these principles since 2012 when I first developed the concept of a framework for embedding employability. The HEA published this in 2013. I subsequently went on to lead the team at the HEA who developed the framework series around a range of strategic priorities in H.E.

Fast forward several years, now at NTU we are about to embark on a series of pilots to test a brand new research informed taxonomy or framework based on my PhD and which we have adapted (the same one I shared in a previous post).

I have built my career over the last 8 years on developing and applying frameworks in practice so generally speaking you could say I am a fan! Having some point of reference, a rationale, a recipe to guide and support the curriculum design process in my opinion is crucial if we are to effectively support students for what Norman Jackson describes as a future and complex world. Now more than ever!

Kevin Byron: I agree wholeheartedly with the need for frameworks especially when there are clear learning outcomes in any kind of teaching or training. Also it's essential that they evolve over time. In my work presenting research skills workshops to Ph.Ds, I have used a specific form of Creative Problem Solving as a general framework, and this has been adapted to a number of different workshops (eg planning the Ph.D, Managing your supervisor, Writing for publication etc). Interestingly, over time I have taken out more of the detail in the framework, than I have put new stuff in, and it appears not to have made a difference. Well actually it has made one difference - that I've found it easier to present the ideas.

Doug Cole: Kevin Byron, You raise some good points and I agree with the need to reflect on the framework over time. Are we communicating and explaining it effectively? Is it working? Do people understand it? Which bits are engaging and which are not? The more we use them in practice the more this reveals. However if we get it right the first time I am definitely against change for the sake of it which I have experienced personally over the years.

I believe that it is possible to develop core and guiding principles that effectively stand the test of time a little better. That's for me where aligning this thinking with the right research just provides an opportunity to get off on more of a solid footing so to speak. For example the four key stages in the embedding employability framework I developed in 2012 are still as relevant 8 years on as they were at the time. Yes some of the language around it has evolved but at the heart of it this scaffolding so to speak still stands strong.

We actually used this framework to help construct appropriate learning outcomes/objectives as part of the process too. Those same principles are now proving to have potential value in other contexts too, so with the new NTU taxonomy we are piloting it's use not only in the curriculum design process but also with our colleagues in organisational development to help add structure to the NTU graduate scheme, we are using it to explore how to embed an integrated approach to both enterprise and employability. We are also planning to use it in a final year module in the business school to provide both an organising structure for the module itself but also to act as a point of reference for the students reflective assignment.

Finally we are exploring how to use it as part of a needs analysis activity with all new PhD students who join us. All of this is really exciting and demonstrates that if constructed in the right way a principle based approach can add value across so many different spaces.

So a few key rules to consider for me:

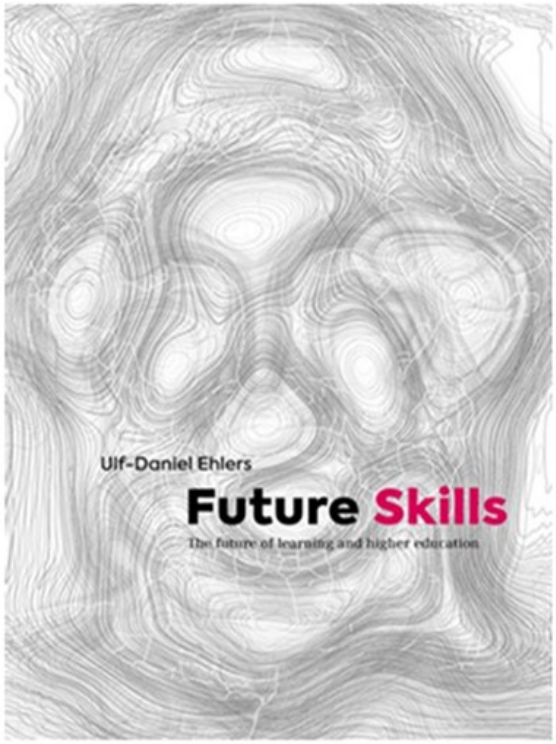
1. Is it truly research informed? Are we considering the 'right research' in this regard too?
2. Is it flexible enough to be contextualised and applied across all course areas?
3. Is the language used clear, engaging, accurate and appropriate?
4. Is the methodology and the process of applying the framework in practice understandable for all stakeholders?
5. Are the right supporting questions included to support the use of the framework for example: are all all key stakeholders involved in discussions and the application of it in practice from the outset (to ensure ownership), how will we effectively measure impact and know whether it has made a difference? So building a review stage in from the outset is also key.

I plan to write more about this over the next few years but these are a few thoughts during my morning dog walk today.

Kevin Byron: Doug Cole – thanks, you have answered some of the questions in today's posting.

Ulf Daniel Ehlers: We have just published a new open access book (See Figure 11) summarizing our 4 years of research. Accessible here: https://nextskills.org/

Figure 11 Future Skills – The Future of Learning in Higher Education.



etc

Kevin Byron: Ulf-Daniel, Many thanks this is really interesting work.

Kevin Byron: Someone may be able to correct me on this, but I've never been able to find any published studies on what would be an attempt to validate certain frameworks. The idea would be a form of double-blind test in which one group of students are given the learning outcomes but no framework, and another group are given both. As far as I'm aware the generic frameworks of creative problem solving have never been tested this way. Also, given that many organisations don't even have a creative problem solving process in place, one wonders whether tacit skills and knowledge are as good as structured frameworks! This clearly wouldn't apply to work in which there is a lot of new knowledge to be imparted in addition to skills!

Doug Cole: Kevin Byron really tricky one so not surprised it's hard to find anything published. This may be a bit out there, but is there something to be said here for frameworks which contain elements that have been individually validated? For example the links between gaining work experience and employment or emotional intelligence and success in a work context. By combining areas that have individually been validated in studies does that not position that framework well in terms of the overall validity of this combination of areas in some way? Been a long week so apologies if this is a bit daft!!

Simon Rae: I'd always assumed that it was unethical to do this sort of thing, ie to divide students into two groups, one that gets something designed to aid their learning and the other that doesn't … if it works one group misses out, and if it doesn't then one group will have their learning time wasted. Not for something as big as a framework for course design.

Kevin Byron: Simon Rae This is precisely how double blind tests are carried out in medical research. For example the Oxford Covid-19 vaccine was given to one group and a placebo given to another group. Even in trials of cancer drugs this method is used. In the case of education it does seem unethical, but this could easily be remedied by repeating the experiment and swapping the groups.

Framework Design – What are the Trade-offs?

This is a slight digression from the original challenge based on the post-Covid 19 problems faced by younger people, but hopefully this will inform potential new designers of frameworks for skills development etc.

The Researcher Development Framework (RDF) was designed by committee for the Vitae organisation, in response to The Roberts Report (SET for Success) published in 2002. The report made recommendations for the provision of professional and career development for postgraduate researchers and research staff.

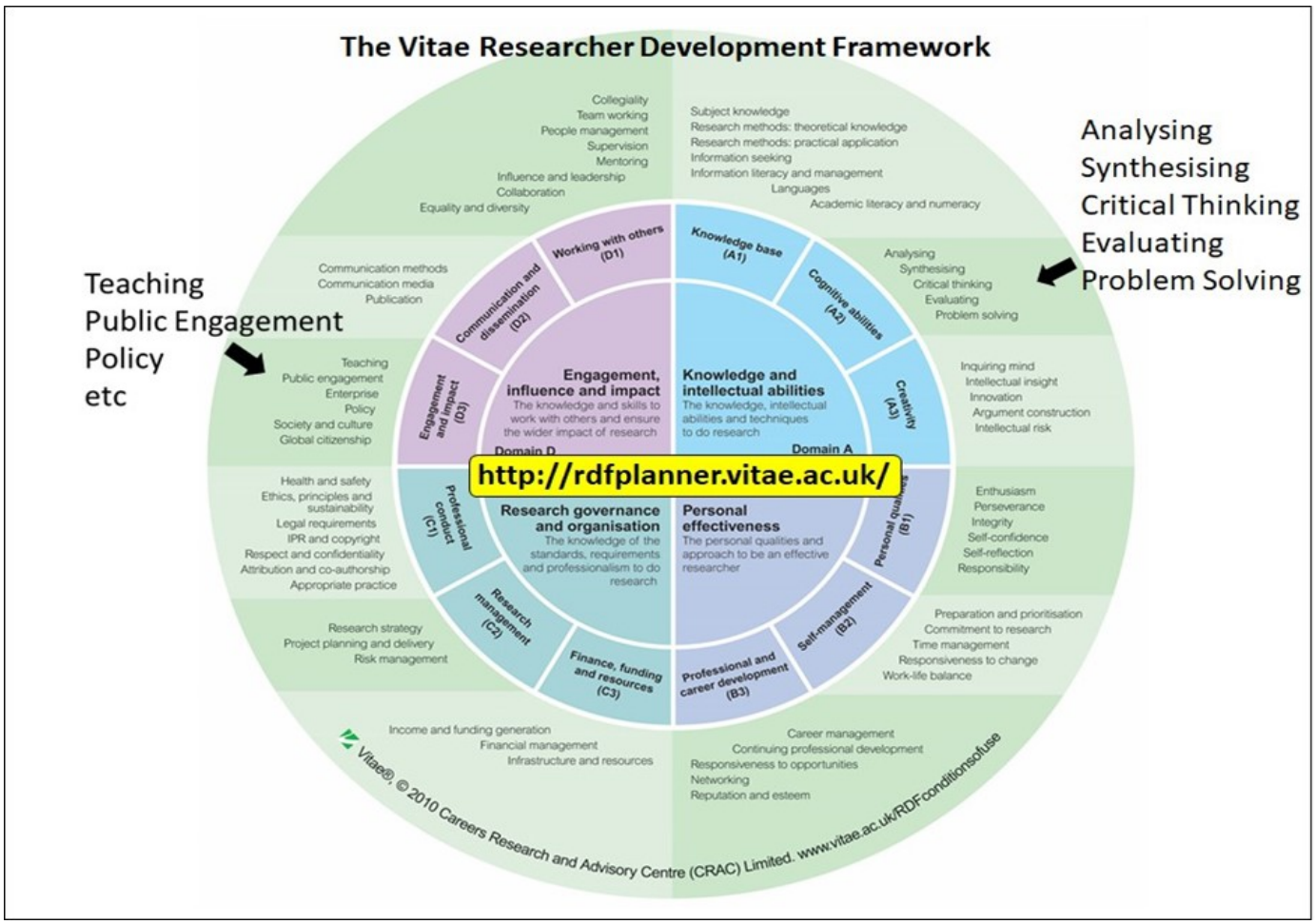
This Framework has been invaluable for helping 'Researcher Developers' (aka Skills Trainers) design specific workshops for Ph.Ds in many UK universities. It has also been used by Ph.Ds and research staff themselves, to improve their awareness of the additional skills they may need to be more rounded researchers, and also to track their career trajectory. The RDF shown in Figure 12. below consists of 4 Domains, 12 Sub-Domains, and 64 Descriptors. Beneath that there are a set of phases that map out the characteristics of researchers at different

There's no question on the success of this framework for its intended purposes, and it is in widespread use in over 50 UK universities and at a number universities in Europe. The general point I wish to make concerns the trade-offs in the design of frameworks, methods and processes that will be used to help in teaching and training etc.

It has been argued that the RDF became over-laden with information, and that it could overwhelm a new Ph.D student when they are confronted with the range of skills they need to develop. The point is well made in my view, but in partial defence there is a number of additional resources (eg booklets) to complement the RDF that help in providing information on specific research skills.

A second, more important, observation is that slicing and dicing skills into categories always leads to anomalies, and this is evident in the RDF at the Descriptor level. For example there are Descriptors for Creativity, Critical Thinking, and Influence, and I would argue that those are general skills that needs to be resident in all Domains, and Sub-Domains. However, in doing that I have no doubt that other anomalies will appear elsewhere. This applies to any educational framework because there are overlaps and complex relationships between different skills. Perhaps anomalies only appear if we dig too deep into the detail?

Figure 12 The Researcher Development Framework.



In my own experience of using a Creative Problem Solving framework (see Figure 2) to help in designing a number of different workshops for Ph.Ds, I've observed that over time I've taken out more detail than I have added, even as new ideas have appeared. The current version is a very slimmed down version of the original.

Another personal observation of using a detailed framework, was the realisation after a few years that certain things I believed were vitally important and needed to be included, actually didn't make much difference. These realisation were forced upon me by time constraints in delivering the workshops. For example at one university I might be allotted two days to run a 'course', and at another university they might have only half a day available for the same course.

This was initially problematic to me because I would worry that certain important things would need to be excluded. However it became a really useful learning opportunity for me to let go of cherished notions about what is and is not important.

Q3: What are the important trade-offs for the best designs?

Q4: What have you learnt in designing frameworks that could be useful to others?

Comments and Discussion

Doug Cole: Kevin Byron you raise some good points here and I agree with the need to reflect on the use of frameworks over time. Are we communicating and explaining it effectively? Is it working? Do people understand it? Which bits are engaging and which are not? The more we use them in practice the more this reveals. However if we get it right the first time I am definitely against change for the sake of it which I have experienced personally over the years.

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I plan to write more about this over the next few years but these are a few thoughts during my morning dog walk today.

Andy Penaluna: I mentioned translating earlier, in my earlier work I didn't take culture into account sufficiently in the Balkans, and in Croatia their language made it almost impossible to translate our UK (distinctly different) Enterprise and Entrepreneurship definitional stances. I would go as far as to say that our language issues actually reduced our ability to communicate effectively in the development of EntreComp, with the net result that we all now translate it slightly differently in different countries.

Doug Cole: Andrew Penaluna I totally understand but you know the language issues also apply here, not only between countries. We think we are speaking the same language when this is far from reality in practice. Enterprise,

placements, employability, skills all terms used on a daily basis and meaning different things to people. Which is why I always started with a defining stage, in context, so that that mutual understanding is achieved at least a local level before proceeding. It's not easy!

Ice-Breakers and Energisers

As a bit of light relief from the discussion on the challenge of frameworks to help guide the design and content of a skills course/workshop, we move on to ice-breakers and energisers. These terms may not sit well with some people, especially when one has been at the receiving end of their excesses, and I can relate to that. Indeed on one of my ventures to the CPSI Creativity conference in the USA (which is largely workshop based), I attended a whole session on this topic, hoping to learn when, and how to apply such activities.

The low point in this session, happened when our group was asked to walk with arms-locked, around the perimeter of the room in the style of Monty Python's 'Ministry of Silly Walks!' Quite apart from the absence of any learning in that activity, I vowed never to put any attendees at my workshops through any embarrassing public displays in the name of re-energising everyone.

Figure 13 Icebreakers and Energisers

Whilst some people prefer to avoid these activities all together, they do have useful purposes depending on what is being explored in the workshop, and when. Some of the benefits of 'Ice-breakers' and 'Energisers' when working with groups include:

….a way of encouraging intra- and inter-group socialising at the beginning of a session, so that people feel more comfortable talking and working with each other.
….a means of facilitating mind-wandering and incubation during an extended idea-generation session.
….a way of helping with team-building within groups.
….a means of self-observation and sharing.
….a technique for shifting the attention, and re-energising after an extended period of focus on knowledge transmission by the teacher/trainer (See Figure 13).

Q: Are there any activities you have used or experienced that come under the generic title of 'Ice-breakers or Energisers' (or maybe you have a better term to describe them?) Please add their purpose, the resources required, and if possible how long they last? Also feel free also to share any anecdotes of what worked well, what should be avoided, or what needs a re-design?

To start off the discussion, I'll describe a simple exercise below that I've used with students, and other exercises will follow during the week.

Exercise Name: Team Identities
Purpose: To help groups of people get to know each other, and form a team with a common aim.
Duration: 20 mins.
Resources: Pack of 45 cards with a large printed letter of the alphabet on one side (the letters include duplicates of vowels and commonly used letters like R,S,T,H,G etc).

In this workshop there were about forty students present, and they were working in teams of four or five, seated in a training room laid out in cabaret style. They were required to form a team with the other members of their table whom they hadn't met before. The 2-Day workshop had the ultimate aim for each team to find an original idea for a social enterprise, and prepare all the necessary information for presenting a business pitch to a potential sponsor.

At the front of the room, a table was laid out with all the letters (and many duplicate letters) of the alphabet printed on cards measuring about 10cm square. The letters were face-down, so no-one could see what was printed on them. The students were then invited to form a queue and walk up to the table, take a card and return to their table. Then at the facilitators' signal they turn over their cards, and are invited to come up with a new English word that's not in the dictionary, using all of the team letters. One extra vowel could be supplied by the facilitator if necessary. The idea was that their chosen word defined their group identity and values, so conversation naturally ensued when the exercise started.

After a few minutes, the teams were invited to display their word to the other teams, and in a couple of lines, describe their definition of this word and how it related to the team identity.

Comments and Discussion

Andrew Penaluna: We do a 'walk across the coloured papers' exercise with postdocs in Researcher to Innovator. Random A4 sheets are on the floor in a separate room, 6-7 rows are the norm and each team has their own row, which takes them from one side to the other.

One 'mover' is selected and one observer, who stands at the far end. If the mover steps on the wrong colour sheet (pre-determined 'correct' that they have to guess), one of us judges just say no, and they have to leave the room. The observer takes on the role of the mover and another team member comes in to be the next observer... and so it goes on until they make it across the room correctly - stepping on all the 'correct coloured papers in the correct sequence.

Typically they spend lots of time outside of the room trying to theorise the next correct step, which is a waste of time as it is random. The fastest team in 4 years of this was just over an hour, the norm is an hour and a half.

Following a discussion we show these top end academics a video of primary school pupils doing the same exercise, achievement tends to take between 8 - 11 minutes.

Their faces say it all, and we then ask, so what did you learn as a child that you have now forgotten?

Kevin Byron: Great exercise Andy - thanks for sharing!

Jennifer Willis: Kevin Byron I am really struck by the similarity of your image and a photo I took of a 6-year old I was teaching a couple of years ago (Figure 14). I was again teaching creative writing, and his story was science fiction. In this image, he is describing to me how the universe had been created (yes, he was only 6!). I have used this before because I think it captures precisely the creative process he is going through.

Figure 14 How the universe was created!

Jennifer Willis: I thought you might be amused by this paradoxical approach Kevin Byron. My husband (Yoga) is both a psychiatrist and a group analyst. When he was studying to become the latter, in the late '80s-early '90s, he recounts the first meeting he and his fellow trainees had. Yoga arrived late; 10 of the 12 seats were already occupied, so he sat down in one of the vacant ones, in the circular arrangement. He was feeling embarrassed and uncomfortable at being late. Everyone was silent, not a word was spoken. Another late-comer arrived, flustered, and apologised for being late. Still silence. As time went by, Yoga realised he was contributing to the silence and relaxed. There must have been a visible change in him as people turned towards him and asked, "Are you the convenor?" He replied, "Certainly not!" Silence resumed. Eventually, someone broke the silence and the group exchange began.

I assume that this was a deliberate ploy, and the convenor was trying to make a point about individual responsibility in the group. As an ice breaker, it wouldn't work everywhere!

Kevin Byron: Thanks Jennifer - Reminds me of the saying: "Don't speak unless you can improve on the silence!"

Norman Jackson: One that has worked for me on a few occasions.. people self-organise into groups of 4 or 5 and they have 5mins to find one or more interesting things/facts they all share beyond the obvious.. small prize for what the whole group decides is the 'best'.Always noisy, lots of laughs and interesting to hear the results.

Andrew Penaluna: I was invited to guest lecture at Cardiff University once, so as you do, I borrowed a janitor's coat and his mop and bucket, and started to mop up some fictional soft drink in the corner of a hall with no seating. Interestingly, the students were moaning about having to listen to another boring speaker, so I asked them what it was about., then asked them what the point of these lectures were, and so it went on... by the time they clicked I was applauded onto the stage. Lecturers at Cardiff don't do things like that apparently!

Jennifer Willis: Humour seems to be an emerging theme in these examples. I wonder if others would agree?
Humour seems to be an emerging theme in these examples. I wonder if others would agree?

Andrew Penaluna: Learning should be fun. Something I have never forgotten from my teacher training... so we can legitimately play the fool.

Jennifer Willis: I couldn't agree more Andrew Penaluna!

Paul Kleiman: Words like 'fun' and 'play' rarely if ever appear in things like course outlines, programme/module specs etc. It seems like education is far too serious an undertaking to be sullied by having good time while doing it!

Kevin Byron: Where Do You Stand? - This is an example of a 'Self-Reflection' Energiser that I've used in several workshops as a way of shifting attention, and it also provides an opportunity to stretch the legs a little (See Figure 15.). I introduce it when I feel the group are flagging from too many PowerPoint slides, or too many small group exercises.

Figure 15 The Adaptive-Creative Continuum

It's an adaptation and application of the theory developed by Kirton known as 'The Adaptor –Innovator Index'(5).

First of all I invite all the attendees to stand in a line shoulder to shoulder. I then define two extreme stereotypical (and somewhat biased) forms of problem-solver as follows:

1.The extreme Creative is someone who comes up with big ideas that are often unconventional, and even though many of the ideas are impractical, occasionally their ideas are ground-breaking. They tend to be rather disorganised, they are risk-takers, and are always jumping from one project to another driven by their incessantly active imagination. They are not so good at project management and often don't work easily in teams, often turning up late at meetings, and their desk is chaotic.

2. The extreme Adaptor is someone who is rather conservative when it comes to idea generation, and prefer to stay within the boundaries of convention. Their ideas make a step-wise contribution to progress, and they are risk averse. They are very organised, and everything is filed away in its proper place. They are very good project managers, and highly reliable.

Having described these stereo-types, I then indicate that the left hand end of the line of attendees represents the extreme Creatives, and the right hand end is where the extreme Adaptors stand. In the middle we have people who have elements to a lesser degree of both extremes. The attendees are now invited to re-position themselves along the continuum relative to how they view themselves.

One or two people immediately move to the extremes, and quite a few hover in the middle, but the whole continuum is usually spanned.

I then invite the attendees to retain their position in the continuum, but to form a semicircle so that the two extremes are now diametrically opposite each other.

Then, starting with the extreme Creatives I invite them to describe what the problems are, or would be, for them in working with the extreme Adaptors. I then move further along that sector of the semi-circle repeating this question. Next I invite the extreme Adaptors to describe what the problems are, or would be, for them working with the extreme Creatives, and so on with the people adjacent to them. Then I ask the people in the middle about their issues with both extremes.

After that, I return to the extreme Creatives again, and invite them to say how they might benefit from working with extreme Adaptors, and vice versa with the extreme Adaptors, and also the folk in the middle with regard to both types.

The attendees are more than willing to discuss their thoughts on these matters, and the conversation often needs to be managed as several people offer comments simultaneously. I conclude the exercise by inviting everyone to reflect on the benefits of working with people that are not of a similar mind-set to themselves, and how collaboration thrives on diversity. The exercise lasts about 30mins.

Norman Jackson: Kevin Byron I like these ways of trying to visualise and position myself on a continuum as long as I can move when I hear what others have to say!

Kevin Byron: Norman Jackson Actually you've highlighted something I should have added. At the end of the exercise I would ask the group if they wanted to move elsewhere and most headed to the back of the room for the free lunch!

Jennifer Willis: I fear I would be at the boring adaptive end! Kevin Byron: Do you find as you move towards the middle of the semi-circle that opposites have more in common than differences? That would seem to be the logical expectation.

Kevin Byron: Jennifer - They only seemed to connect better with their opposites when they realised how they could help each other!

Lucie Hutson: With my first year undergrads I put out potato heads and accessories and invite them to make a character that represents them. The chatting as they are made is natural, and people often share stories before introducing their potato and giving an insight on who they are. People can share where they feel comfortable rather than forced.

Figure 16 Undergrad Ice-Breaker

Kevin Byron: Lucie - that's a great, indirect way to facilitate conversation, and having a diversionary activity takes away the nerves. I attended a salon in America a few years ago, where we were all seated in a large circle , and conversation was supposed to evolve naturally. To take the pressure off contributing, we had all been supplied with some coloured playdough and everyone immediately began making things with it. Eventually, a conversation started, presumably inspired by the newly created playdough sculptures!

Lucie Hutson: yes done that and foil and of course Lego!

Jennifer Willis: Another (maybe obvious) observation about the examples given so far: they are all about identity. Do we need to get personal to break the ice? For what it's worth, an example from language teaching: in triads, one person listens (and can take notes) while another interviews the remaining person in the group. Stage2 is when the listener has to tell the whole group about the other members of their triad. Quite mundane by comparison with all your examples!

It could be adapted to make it more fun by asking the whole group to guess which of the triad is being described.

Kevin Byron: That's a neat exercise - thanks. There's lots of examples that are not about identity. For example a lot of physical ice-breakers/energisers are simply designed to get people on their feet and moving about. Tomorrow I'll post one that is an example of purely convergent problem solving.

Beth Cross: Very simple quick one. Ask pairs to play rock paper scissors, only the goal is to throw the same shape. It can help students reflect on our common modes of being and what tips the difference between a competitive or a collaborative stance.

Kevin Byron: Thanks Beth.

Mary Trant: The problem with many icebreaker or energizer activities is that they are not debriefed. At the end the facilitator should 'take up' and explain the activity. If there is no good reason to do the activity, then don't do it.

Kevin Byron: Mary Trant - Well said - that is so important! - they may be fun but there should be some learning and shared reflection.

Paul Kleiman: I often start by providing the participants to with A3 or larger pieces of paper and lots of coloured pens, and ask them to draw/makes marks on paper how they feel about the topic of the session. I give them about five minutes then ask each one to say their name and explain what they've drawn in 30 seconds exactly (timed either by me or another participant). It usually sets up a good 'buzz' in the room - it's amazing how much information can be delivered in 30 seconds - and also a good insight into where people are at.

Kevin Byron: Nice Idea Paul - I wonder if it would work as an alternative to a feedback questionnaire at the end of a session? Or maybe compare before and after drawings!

Elizabeth Csy: I was teaching a course on intercultural communication to "international business management" students at a uni of applied sciences last year. We engaged in a number of different activities and case studies, but there were a couple that I thought were great (and have tried to include one or two with my international management students).

During one of the first classes, an example activity: the triangle of commonalities:

- groups of 3, large paper, and 3 different colours (pens, markers)
- each member writes their name in a corner, then with whatever criteria, they chat among themselves to see what they have in common (eg. Sara and Max play volleyball, or Sara, Max, and Lara focused on English during their A-levels)
- after allotted time, have each group introduce themselves to the class (each one introduces another one from the group)
- during a debrief can talk about cultural similarities/differences, for example and it's getting the group talking to one another

Kevin Byron: Elizabeth Csy - Thanks - that's a great way of easing into a deeper conversation.

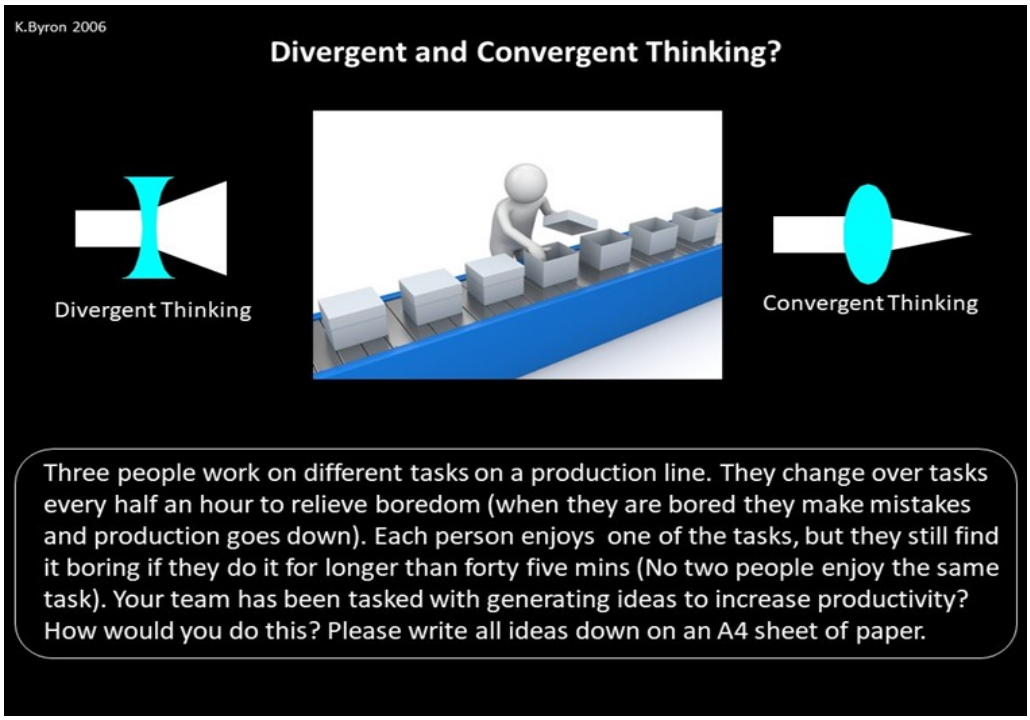
'Diverge, Converge or.....?'

The terms 'Divergent' and 'Convergent' thinking were coined by the psychologist J.P. Guilford in the 1950s (6), and about twenty years later divergent thinking was regarded as a main feature of creativity. Osborn and Parnes adopted these two modes of thought as essential practices that ran through all six stages in their Creative Problem Solving framework (1). Emphasis was made at that time, on the need to separate these two modes of thought when working in a group, (ie diverge first, converge afterwards), as convergent thinking was regarded as a disruption to creativity.

Subsequent studies have shown that under appropriate conditions, convergent thinking can actually enhance the productivity of divergent thinking in group work (7). Whether or not it's possible for the individual to wilfully separate these two modes of thought is questionable, because creative ideas don't just arrive ready-made. Rather, an inspired idea undergoes iterations of refinement before, and during its execution. These iterations involve switching between divergent and convergent thinking. The exception where convergence is perhaps more subdued, may be when we are passively immersed in our imagination.

Divergence, symbolised by a beam of light incident on a concave lens as shown in Figure 17, concerns an investigation into areas that have not been explored with regard to a current challenge. The convex lens on the other hand brings what has already been illuminated to a focus, and in CPS sessions this means decision-making, or selecting the best ideas from a number of ideas that were found during the divergent phase. Crudely speaking one could attach convergence to critical thinking, but the latter has so many forms (analysis, synthesis, evaluation, decision-making, etc) that it is a simplification.

Figure 17 Divergent and Convergent Thinking



In current times the characteristic diamond shape that symbolises divergence followed by convergence, appears in many teaching and training frameworks and processes (see .

An introductory exercise I've used in group work to demonstrate the difference between these two modes of thought is shown in Figure 17.

The convergent responses are those that use only the information supplied to find ways of increasing productivity. On many occasions a make-shift spreadsheet has been produced in which calculations have been made for the optimum time between exchanging tasks. The divergent responses go beyond the remit of the instructions and include things like incentives, extra breaks, employee part-ownership of the business etc. There's nothing intrinsically wrong with either sets of responses, but the idea of the exercise is to encourage attendees to step outside their familiar way of thinking, and come up with both conventional and novel solutions.

Building on the earlier postings the questions for this sub-theme are:

Q6. Do you use the convergent/divergent thinking distinction to nurture creativity? If not, what other methods would you recommend?

Q7. If you do use convergence and divergence, how do you demonstrate their differences?

Comments and Discussion

Jennifer Willis: One KS3/4 creative writing task I enjoy involves an image where a woman washing in a sink looks through the window and sees what looks like a child burying an animal (The details of this could be changed). The exercise is for each learner to write a story of what is happening from 3 perspectives: (1) the woman's, (2) the child's, (3) the animal's. It's fun but also requires divergent thinking.

Beth Cross: Thanks!

Andrew Penaluna: I started with divergent and convergent thinking frameworks too. Since researching enterprise education in terms of brain development about 15 years ago I now understand that divergent is actually a suppression action to avoid premature articulation, and is effectively a skill to learn.

In 2004 the ad agencies (read 'lots of money') were fed up with all the analytical thinking coming out of Unis, or creativity that could not easily be put to purpose. So the Independent Practitioners in Advertising Group gave up on Uni grades and created their own diagonal thinking test... most of which you'll recognise: http://www.diagonalthinking.co.uk

Kevin Byron: Andrew Penaluna Thanks - that's new to me - will have a closer look.

Heather Somewhat: Andrew Penaluna Interesting! Is the idea of divergent thinking as a 'suppression action' something that's well-known, or is this how you see it? It really resonates with me, as it supports the idea that mindfulness mediation facilitates creativity - it could also be described as a suppression of 'thinking', or of the way the brain gravitates back to the same old thought patterns, articulating everything.

Marta Davidovich: Andrew Penaluna The term 'divergent thinking' was used by cognitive psychologist J.P. Guilford when he was launching the 'field of creativity' to replace the word - 'imagination'. What exactly does the term 'suppression action' mean? Using 'lived experience of human creativity terms' imagination is what launches the creative process - often sparked by a curiosity, wondering (what if?) or 'inkling'

Andrew Penaluna: Sorry if I am telling you things that you may know already Marta, but brain cells connect through strands called dendrites. These can want to connect (excitory) or not wish to connect (inhibitory).

When we 'know' something we are activating a neural cloud that we use many times over, and just like friendships, brain cells like to connect to the ones that they have buddied up with before. The term used is somantic markers.

To be creative, we have to break a link in the neural cloud and introduce or remove at least one connection. Kids are wired to do this more easily, but as we get older our brain 'prunes' the dendrites if we don't use them... making the new connections less likely.

Thus, in order to think creatively/divergently, we need to suppress the automatic nature of brain cells connecting only with those they have 'befriended' before.

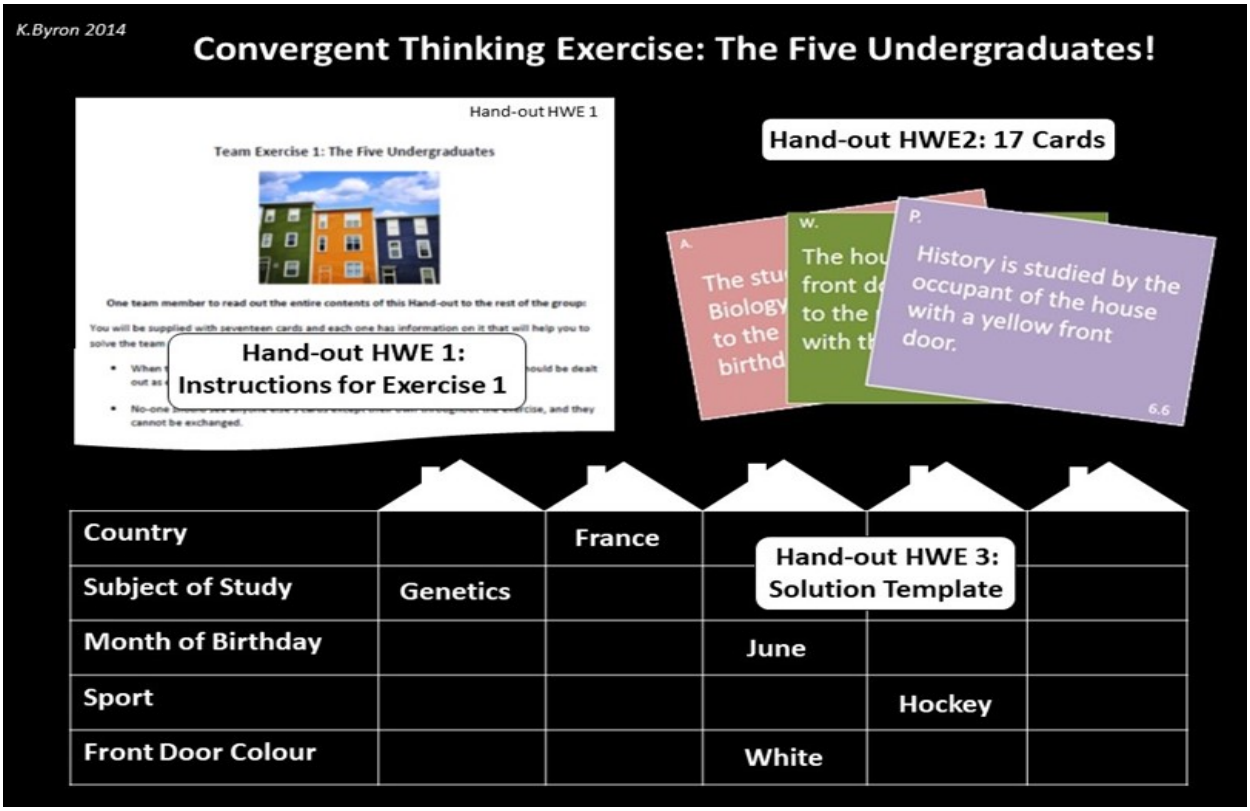
The best way we know of doing that is to reward newness of thought, so that the 'good feeling' associated with this is enhanced. Then the brain relearns the value and it is a virtual cycle of improvement.

Kevin Byron: Convergent Thinking and Team-building Exercise - 'The Five Undergraduates'

I developed this as part of the ‘team-building’ section of a day-long course on: ‘Team building, Creative Problem Solving and Project Management’. This was presented to over a hundred 3rd year Engineering student at Heriot-Watt University from 2014-18. For their final-year project in this course, the students worked in groups of between 5 and 8, and they were required to work from a brief supplied by an industrial sponsor, to create, design and develop a new product. The course was designed to provide a flying start to that project.

For this part of the course the group members first worked together on a group ‘Convergent Thinking’ exercise shown in Figure 18., and this was followed by a ‘Divergent Thinking’ exercise. The idea was to use the outcomes from these exercises to see who in the team tended more towards ‘Creative Thinking’ and who were more attracted to ‘Adaptive Thinking’ (see earlier exercise) and who might be the team leader. Of course no exercise is purely convergent or purely divergent, but they can be designed with a stronger emphasis on one of these modes of thought.

Figure 18 Group Convergent Thinking Exercise for Team Building



The exercise is a modification of what has become known as ‘Einstein’s Puzzle’. Here I’ve changed all the parameters in the original puzzle and the way it is solved. It consists of seventeen clues about five students who live in a row of houses which have a different coloured front door. The students have a different country of origin, a favourite sport, a different subject of study, and a different birthday. With the seventeen clues, and the template shown in the image, it takes the average person working alone about 15 minutes to solve it. The clues are given below, and you may wish to give it go.

However for this to work as a team exercise, I added another layer of difficulty, and this was to make cards of each of the 17 clues. Each team was given one set of the cards, and these were dealt out as evenly as possible to the team members without revealing them. The idea was (in order to help with team-building), that they could not show anyone their cards, and they could only read them out.

This ensured the team members worked together, but during the course of the exercise, one or two potential leaders started to emerge who took the initiative to try different strategies. A solution template was supplied for one team member to fill in as shown in Figure 18 above.

I added an additional twist to the exercise in the form of a short-cut based on additional information in the cards, but this was never spotted. In the de-brief I discussed this short-cut as an opportunity to be creative even in a convergent exercise…..

Here are the 17 clues:
1. The student studying Mathematics lives next door to the student who has a birthday in September.
2. Geography is studied in the house next door to the student who has a birthday in January.
3. The student studying Physics plays Volleyball.
4. The Chinese student is studying Chemistry.

5. A next door neighbour of the student from Germany plays Hockey.
6. The student from France lives next door to the house with a Yellow front door.
7. The Badminton player has a birthday in July.
8. The house with a White front door is next door to the house with a Yellow front door.
9. The Japanese student lives in the house with a White front door.
10. The student from Pakistan has a birthday in August.
11. Badminton is played by the student who lives in the house with the Blue front door.
12. The student from Germany does Athletics.
13. As you face the row of houses, the Blue front door is immediately to the right of the Green front door.
14. The student who studies Economics has a birthday in March.
15. Geography is studied by the occupant of the house with a Red front door.
16. The student who lives in the middle house plays Tennis.
17. The student from France lives in the first house.

Networking (or Not)!

To re-cap on this overall theme of 'Creative frameworks, tools and techniques', the idea is to share practice on the design of various aspects of an 'event' which will have as one of its aims, the exploration and/or nurture of the participants' creativity. The specific scenario initially related to the needs of students facing an uncertain future based on the aftermath of Covid-19, who were also disillusioned with an education system that was not bringing out their creative potential. However for the purposes of sharing here, any scenario can be assumed provided it is underpinned by some kind of opportunity for working creatively with the attendees.

So far we have discussed the 'event' framework designs, ice-breakers and energisers, and the use of divergent and convergent terminology in the design. The next sub-theme explores networking, as this is a common feature of most group events especially where many of the participants haven't met before.

Figure 19 Different approaches to Networking

I've lost count of how many events I've attended where the facilitator or organiser said something like: "Let's spend the next twenty minutes networking with other participants!" In my view this is just as ineffective as saying to a group of people: "Be creative!" or "Apply your imagination!" The words often don't guarantee the action unless there is some other benefit beyond random small-talk with strangers. So the: "Let's network!" method shown in Figure 19. above, as 'Unstructured' is somewhat ineffective, unless of course there has been some earlier cross-group exercises where brief conversations with new people may have already started.

The other extreme of unstructured networking, is the Inquisition method known as 'Speed-networking' in which conversations with everyone present is compulsory, and regimentally timed. It operates by having two parallel rows of chairs where the participants are seated opposite each other. At the facilitators' signal they have exactly two minutes to exchange information about each other before the facilitator - who can out-shout a sergeant major! – orders them all to move to the next person. That is except for one person at the end who remains seated throughout. The person seated to their right will move past them to sit opposite them. With this arrangement everyone will eventually get to sit opposite everyone else (assuming there is an even number of people present), and thereby 'network' with them. Well that's the theory, but after about the seventh person, one is beginning to entertain the idea of inventing a new persona just to break the tedium. I've both experienced and facilitated (as a stand-in) speed-networking, and I've found it a very draining experience, but then the number of participants was about 30! For only a small number of participants it would be more practical, but the militaristic way it operates doesn't appeal to all.

In my view networking should be an indirect process that hardly needs to be mentioned, if an event has been designed for interaction with others throughout its duration. An example of this is shown at the bottom of the image below. Here I was working with Ph.D and Postdoc students and I had invited them to draw a map of the progress in their field of research, using Magic Whiteboards that had been attached to the walls. Music accompanied this part of the exercise to enable them to relax whilst spending twenty minutes working entirely alone, and visualising how they might best represent progress in their research field. This part of the session morphed into the coffee-break, just as they were finishing their creations. I simply invited them, when ready, to wander about in this great exhibition they had created, and without any mention of the 'networking' word little clusters of people gathered around one poster, then another, and the room was filled with lively conversation as they shared their research ideas. One of the aims of this event was to explore multi-disciplinary research, but again nothing needed to be said on the matter because it happened naturally.

In brief networking needs a reason for networking other than some vague idea that it might be beneficial to go and talk to someone you don't know. When that reason has been embedded in the design of the workshop, nothing more needs to be said!

Q8: Do you have any experiences of effective networking methods when you have been a participant in some kind of group event/course? If so why did it work?

Q9: What 'networking' methods have you used in your own teaching/training/facilitating experiences? Any suggestions for a more novel approach to networking, that may not have been tried yet?

Comments and Discussion

Andy Penaluna: I was always impressed by Sheffied Hallam's Venture Matrix. It kind of combines the lot so not new, but they are very accomplished!! https://tinyurl.com/y2abg3a

Kevin Byron: Many Thanks Andy - a very well thought out approach, enabling the students to acclimatise to the abrupt change in environment .....and no mention of the 'N' word!

Jennifer Willis: You have raised an interesting question Kevin Byron. The more I look at your image and example, the more the nature of purpose occurs to me. In the speed-networking task, the participants did have a specific reason (elicit personal information) but this was not emotionally engaging for them. Talking about their research progress was of immediate relevance and interest and implicitly they might get pointers that would help in their own research. So, I am agreeing that purpose is important, but differentiate between the type of purpose. Emotional engagement seems to be paramount.

Kevin Byron: Jennifer - you may find this interesting, as it goes further into emotional engagement. I attended a Zoom session on it yesterday and felt there was a cultural issue. I was the only UK person in the session, and I can't say it's something I would wish to explore in a workshop with people I didn't know well! https://medium.com/better-humans/a-powerful-game-for-more-intimate-and-authentic-relationships-4bbde7c7535

Jennifer Willis: Thank you Kevin Byron. I agree with you, I found it very formulaic and - dare I be explicit about the stereotype - American. I don't relate to this rote approach, which seemed too 'therapeutic' for me. Maybe we are on safer territory professionally by engaging with common academic interests and avoiding the personal dimension.

Kevin Byron: Jennifer Willis - Couldn't agree more! - the other attendees at the Zoom event were from the USA and Canada, and they all got a bit gooey about it, suggesting it would be a great way to start a workshop. When I suggested it would all depend on the purpose of the workshop I was ignored! These prescriptive approaches are the opposite of creative, and one wonders if the 'software mind' is taking over, whereby we become reliant on algorithms to enable communication! It isn't a question of whether AI is evolving to become more human, but rather that humans are evolving to become more like AI...!

Jennifer Willis: Yes! As I write, I am reading Yuval Noah Harari's Homo Deus (which you may know). His visions of mankind in the future are frightening. This and its companion Homo Sapiens are essential reading!

Holly Warren: Thanks for sharing your research and insights. I work with young children between the ages of 3 and 11 yrs old and teachers in the Infant school mainly..

With children I use an open ended dialogue and conversation exploring themes, topics and interests that we discuss and take apart to then reconstruct and reorder. As an atelierista I connect, guide illustrate and question what comes up and walk right round all the conversations allowing a fairly ample perspective for all to see. The finding of one group are the left for inspiration for other groups who can add, change and tweak creating a community narrative and exploration that travels through age groups and visions. The children's interest are; neuroscience, astronomy, urban engineering, natural sciences and innovation in general. We start off with what they know and add in context as much as needed. It becomes a learning journey that leaves many in awe.

Kevin Byron: Hi Holly -Thanks, I like the idea of passing the findings from one group to another.

Holly Warren: Kevin Byron it's a great creative activity. I don't tell the students who did what or their age ...a sort of blind date.

Creative Enquiry! - Questioning

This next sub-theme has been divided into three separate items illustrated in Figure 20 below, and these are described separately. The reason for this is that the kind of creative enquiry that would be applied in events that include the nurture of creativity for both groups and individuals, depend greatly on the kind of creative challenge being faced by the participants.

A creative act is associated with finding a new idea, and 'being creative' describes the behaviours and processes that may (or may not) lead to such ideas. Ideas occupy a spectrum from the intangible, such as insights that aid personal development, or those expressed as specific examples of techniques of influence; to the tangible, such as ideas for a new enterprise, design, and invention.

Figure 20 Three forms of Creative Enquiry

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Ideas don't appear in a vacuum, and in whatever form they are ultimately manifested, they are preceded by some kind of 'creative enquiry'. That is to say an idea is an outcome of some earlier intention by an individual or group. The quality of the idea, and its relevance to the original intention, are highly dependent on the form (and often the duration) of that creative enquiry.

Taking the more concrete form of ideas as an example, many years ago I was involved with designing and presenting a workshop for secondary school students called 'The Invention Adventure'. For one of the exercises, I would supply each of the students with a blank sheet of paper, and coloured pens and invite them to invent something, and draw it on the paper. The response was usually poor with only three or four students beginning to sketch out a design. In the second exercise I invited the students to invent a new game. Within minutes the

majority of students were sketching out some kind of design. Here the simple creative enquiry had been refined from being too open-ended – a kind of 'imagination white-out' - to something that provided a way in, or starting point for their creativity to gain traction.

Creative enquiry is generally a process of exploring or refining a question for which creative solutions are sought. The enquiry is usually facilitated through asking further questions to give more substance to the original question, and identifying assumptions to reveal hidden aspects of the question. This questioning may be by oneself, a coach, counsellor, facilitator, colleague, supervisor etc, depending on the situation in which ideas are sought. The more clearly a question is asked, the more likely the ideas for addressing it will be both relevant and useful.

The first example in Figure 20. shows the familiar 'Diverge-Converge' diamond discussed earlier, but instead of this being applied to generate ideas, it is used as a means of creative enquiry. This idea of enquiring about the nature of a creative challenge before rushing to find ideas to meet the challenge, was an evolution of the original work on creativity by Alex Osborn in the 1950s (2) and later in the context of Creative Problem Solving by Osborn and Parnes (1).

Techniques for creative enquiry however can be traced back much earlier to the Classical Greek Philosophers as discussed later in item 2 on Socratic dialogues in Figure 20. Another notable contribution to creative enquiry was Francis Bacon's 'Novum Organum' published in 1620, which, through its emphasis on inductive reasoning ushered in the scientific revolution in the West.

Back to the first example, irrespective of the question we are posing - for which creative ideas are sought - it is essential to unpack it first, and then we can see whether or not the original question was going to yield any useful ideas.

Taking a tangible example, suppose we were on a course of mechanical engineering, and we had been tasked with designing a better bicycle brake. We might articulate the creative challenge as: "How might we design a better bicycle brake?" If we exclude any creative enquiry and rush to finding ideas, the most obvious thing to do would be to have a look at a few existing bicycle brake designs, identify the strengths and weaknesses, then re-design a better brake which eliminates the weaknesses, and capitalises on the strengths. Sure enough, we may have a better bicycle brake (assuming that the strengths were not design trade-offs with the weaknesses, which is more often the case!).

However if we indulge in a little creative enquiry first, by interrogating the original challenge, with: Who? What? Where? When? Why and How? and answering these questions as new challenges, when we get to the 'Why?' question the enquiry might go as follows:

Original Challenge: How might we design a better bicycle brake?

New Question: "**Why** do we need to design a better bicycle brake?"

Answer: "In order to bring the bicycle to a standstill!"

New Challenge: "How might we bring the bicycle to a standstill?"

The new challenge opens the door to other creative possibilities than a simple re-design resulting from the original question. For example we might wish to place a switchable dynamo at the wheel hub, and take some of the rotational energy out of wheel and hence slow it down, by converting it to electricity to charge up the bicycle lights. Indeed this is precisely what one company did in a hybrid design of a bicycle brake that had less wear and tear on the brake shoes. This is an example of 'abstracting' a creative challenge, and by listing out all the various answers (re-expressed as new challenges) to these questions one very quickly identifies a challenge that has more 'heart' and clarity than the original one.

This method can be applied to personal challenges just as easily, and I've used this many times with Ph.D students in identifying solutions to challenges they were facing in developing their skills for research, and in refining their research question.

As a footnote it's worth noting that although the Diverge-Converge diamond in Figure 20 looks like creative enquiry is initially divergent, it's actually a combination of converge-diverge. In other words a standard question used to unpack a creative challenge is more akin to critical than creative thinking. However this has become the convention by those who use this particular process.

Q10. What kind of 'Creative Enquiry' techniques have you used in your own teaching/skills training etc?
Q11. Which effective techniques for 'Creative Enquiry' have you experienced? And what were the benefits?

Comments and Discussion

Jennifer Willis: I agree again Kevin Byron. I find if I give an open opportunity to 'write about anything', pupils flounder. They want to be given a theme before they can start applying their imagination. I write about this in an article on developing creative writing skills which will appear in next month's edition of Lifewide Magazine. When

asked to produce a shape poem, one of the children I write about couldn't think of a theme until I probed into her interests and pastimes.

I understand the problem and often feel my personal creativity is limited because I respond to being set a specific task. I cannot shake off the sense of such creativity being qualitatively inferior to spontaneous expression. I guess it harks back to implicit prejudices regarding art for art's sake!

Kevin Byron: Our imagination is hugely expansive and in our idle moments we can wander anywhere. Under the constraints of a classroom, a teacher and other people, it's much harder to go anywhere. Some hint of a map is all that's required for students to feel secure about where they can then go with the imagination.

Creative Enquiry — Socratic Dialogues

The second item in Figure 20 refers to another form of creative enquiry known as The Socratic Method, and before describing this technique it's worth noting how much emphasis is made in the literature on critical, rather than creative thinking, as the key skill for dialogue with others.

A little reflection on any kind of dialogue soon reveals that critical thinking cannot exist in isolation from creative thinking. Indeed even ordinary dialogue is a kind of dance between these two modes of thought. Reasoning is not a straight path of logical steps leading to a natural conclusion, but a zig-zag, back and forth meander driven by creative ideas formed through associative connections in the imagination. It's only in retrospect that dialogues appear to look like a series of reasoned steps, because the creative process through which those steps appeared, is excluded from the discussion.

The scenario described earlier concerned the design and presentation of some kind of workshop/event in which a group of people are seeking creative solutions to challenges they are facing (in whatever form those challenges take). In such workshops people usually work in small groups of up to six (studies have shown that numbers greater than this lead to 'social loafing' (ie some people disengage but appear to contribute) within a group over time (8). In order to sustain the creativity and to avoid too much digression in this arrangement, it's essential to change the group dynamics occasionally. This is achieved by having exercises in which the attendees work in pairs, individually, and occasionally as one big group. Coffee breaks and 'energisers' (see earlier sub-theme) of course help in keeping the conversations fresh.

If the creative enquiry is a shared challenge within the larger group, the technique of Socratic dialogues is commonly used. Sometimes a facilitator is required to keep the conversation going in a productive way, but if the group adhere to the guidelines of Socratic dialogues they can manage the conversation themselves.

Socrates who famously stated: "The unexamined life is not worth living", developed the dialogue method (in contrast to rhetorical or dialectical methods) as a kind of thought experiment for exploring moral and philosophical challenges. The original dialogues (which were written by Plato) are usually between two characters, one of which is Socrates in most of them. One such dialogue that is quite often referred to in educational circles is the Meno dialogue, which concerns the question of whether or not virtue is innate or taught. The original dialogues apart – of which there are thirty – the Socratic Method is a widely used approach for group discussion and the guidelines are summarised below:

1. No interrupting, and practice active listening. (Many conversations are based on passive, or even not-listening, in which people - rather than absorbing what is being said - are simply waiting for an opportunity to speak!)
2. Discuss the ideas, not other people's opinions - suspend judgment, and respect other people's perceptions.
3. Avoid reciting long anecdotes to illustrate a thought.
4. Be open with your thoughts – this might mean being open about your own misunderstandings.
5. In essence there is no right or wrong answer, but the aim is to approach a truth on matters.
6. To keep the momentum going, it helps occasionally to summarise and clarify what has been discussed.

The underpinning aim in the discussion, is for all participants to think for themselves rather than being led by either the facilitator, or another member of the group. This stimulates creative thinking in the group. The session starts with an open-ended question, but not one for which ideas or solutions are sought, as this may come later (idea generation is discussed later). So the question would tend to start with 'Why……?' rather than 'How…….?'

It's not important to record the conversations or write them up afterwards, because it's the skills learnt in the process that matter, not the end result, if indeed there is one! The skills learnt in this process can then be applied both to oneself when making decisions in order to avoid bias, and in ordinary dialogue with others to avoid misunderstandings or conflict.

I have attended numerous events based on the Socratic Method including a Salon in the USA, (and of course as a facilitator one uses this method all the time in order to de-brief group exercises etc). In the Salon event there

were about twenty people seated in a circle, and we were all given some coloured Playdough which acted as a distraction for those who felt a little exposed or uncomfortable with extended silence. There was no prescribed question in the session, neither was there any requirement to say anything. Eventually someone started an open-ended discussion, and the theme 'moved' around the group in a random way, and then gradually faded to silence again. After a minute or so, another discussion started. This is the equivalent of a 'Jam' session with musicians, and the sense of being creatively connected with the group was quite memorable.

In current times when our thinking can be railroaded by all kinds of spurious influences such as conspiracy theories, propaganda, and fake news, the creative enquiry skills of the Socratic Method can help in seeking truth in situations. And as stated earlier, this is not just concerned with critical thinking, but also with engaging our creativity to seek other ways of processing the information that we receive, and to enable us to imagine how other people think.

Creative Enquiry — Tough Problems

This final item in the sub-theme of 'Creative Enquiry' builds on the other two, and concerns creative conversations, and methods of approaching 'Tough Problems'.

As stated earlier, even in ordinary dialogue we oscillate between creative and critical thinking when seeking answers to open-ended questions, and it's also important to differentiate between creative enquiry and idea-generation during this dialogue. Ideas to solve a problem may arise during a dialogue, and should be recorded for use later, but they shouldn't divert the conversation away from an exploration of all aspects of the subject under discussion.

Creative conversations between participants are essential to the success of large or small group events based on the 'Open Space' method or 'World Café' method: https://openspaceworld.org/wp2/hho
http://www.theworldcafe.com/key-concepts-resources/world-cafe-method

Conversations can vary from, 'evasive' to 'creative' and these are characterised as follows:
Evasive - Disguising the Truth, Withholding Information, Withdrawing Emotionally or Physically.
Conclusive - Opinion Dump, Labelling.
Transition - Taking Responsibility, Equanimity, Shared Intentions.
Expansive - Researching Common Ground, Identifying Facts, Inquiry, Expanding point of View.
Creative - Combining Ideas, Building Partnerships.

However there is no magical switch in the mind that enables us to start a creative conversation spontaneously. Instead we engage in dialogue, and through self-observation identify what kind of conversation we are having, and then with reference to the summary definitions above, aspire to move to a more productive conversation.

In 'Open Space' meetings there is no hierarchy, and no facilitator, and attendees are free to leave if they are not learning or contributing to the organically formed group discussions. The meeting has no minimum time duration, and can be drawn to a close if there is a general feeling that it's over. These guidelines encourage a more creative engagement, and it's interesting to contrast this 'self-organising' approach to meetings with that of the formally structured meetings that we sometimes endure in the workplace! (But of course the latter are necessary for certain purposes, such as progress meetings, reviews etc). In the example shown in Figure 21 below, I was invited to facilitate a large group discussion on 'The Future of Chemistry teaching in Higher Education'.

Figure 21 An 'Open Space' meeting with Academics

I chose to use the 'Open Space' method. Numerous discussion themes were identified through creative conversations in pairs first. These were listed on a flip-chart, and then grouped into parallel discussions for different times in the day and each discussion was given a location where it would take place (in this case the locations were installations in a sculpture park). Participants selected their own timetable, and whoever had proposed a particular theme had the responsibility of standing at the location for their particular session in order to convene their discussion. Participants turned up at their selected discussions and sub-challenges, ideas and actions were all recorded on a flip-chart. Attendees could leave any group at any time and join another conversation. The meetings nominally lasted for 45 mins but if the energy of the conversation was waning the discussion ended.

This third section on 'Tough Problems' is a digression from the earlier scenario of an event/ workshop/course for a group of younger people facing an uncertain future. However it's important to include it in the general topic of 'Creative Enquiry', because some knowledge of tough problems is essential in current times, as we are all confronted with them, and they appear to be increasing in number.

The reference in Figure 20. to 'The Little Book of Circle Processes' by K.Pranis (9) is an example of different techniques that can be applied to creative enquiries with small groups. The other book shown 'Solving Tough Problems' by Adam Kahane (10) is an essential read for anyone interested in creative enquiry in which there are conflicts between participant. One of the many quotes from reviews of this important book reads: "This fascinating book paints both seemingly unsolvable problems and a path towards sustainable solutions. A 'must read' for those who want to be part of creating such new realities" Jeroen Bordewijk, Senior Vice President, Unilever.

Kahane's opening words are: "Tough problems usually don't get solved peacefully. They either don't get solved at all – they get stuck - or they get solved by force. These frustrating and frightening outcomes occur all the time. Families replay the same argument over and over, or a parent lays down a law. Organisations keep returning to a familiar crisis, or a boss decrees a new strategy. Communities split over a controversial issue, or a politician dictates the answer. Countries negotiate to a stalemate, or they go to war. Either the people involved in a problem can't agree on what the solution is, or the people with power – authority, money, guns – impose the solution on everyone else."

Kahane has worked on some of the toughest problems in the world, for example he played an important role in facilitating meetings with the leaders and key stakeholders involved in the transition away from apartheid in South Africa in the late 1980's. For a brief summary of his approach it's worth watching this video: https://tinyurl.com/y62p4pp .Suffice it say that solving tough problems (and that includes problems in the workplace), takes time, and it requires the various actors to desire a satisfactory solution for everyone (not just a political game for themselves). For such a solution to endure, it must be bigger than the problem, and its knock-on effects. One of the reason that tough problems repeatedly return, is because they are only temporary fixes, and are no bigger than the problem. As Kahane shows in the video, they can be solved, but they require a creative shift in ourselves to achieve this.

Comments and Discussion

Beth Cross: Thanks for all the inspiration.

Holly Warren: Wow! The different kinds of conversations is really quite impressive as it has left an impression/ print in my mind. A bit like games and the different kind of games there are.

Idea Generation – Effective Brainstorming

As the new academic year begins under conditions of huge uncertainty, and in an environment for which there is no precedent, there couldn't be a better time to discuss and share thoughts on methods of idea-generation. No doubt as some of the best-made (if not untested) plans for dealing with educational challenges in the time of a pandemic, start to fall apart, new ideas will be needed, and that's in addition to those needed for dealing with the many unforeseen consequences that are about to unfold. Before describing any specific techniques for idea generation in groups, it's worth discussing the management of such sessions. This is vitally important because the most popular method of generating ideas – Brainstorming - is the least productive!

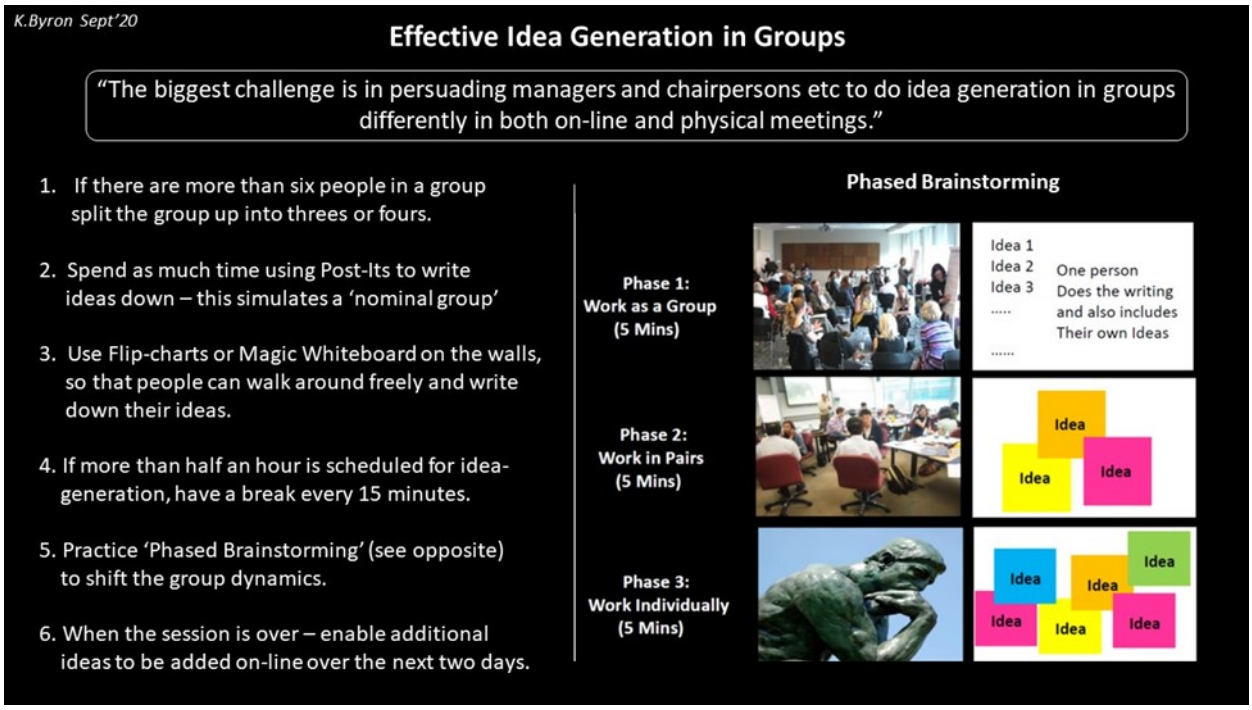
Brainstorming has come to mean different things to different people since the term was first coined by a team of marketing executives employed by Alex Osborn in the 1950's. In his book 'Applied Imagination'(2) Osborn described Brainstorming as a means of generating new ideas to solve a specific problem or meet a specific challenge with a group of people working together. Under normal circumstances the people involved would be seated around the same table, and ideas would be recorded on a flip-chart. No specific idea generation techniques are assumed in this basic description, so ideas arise through free associative thinking.

For example here is a CD – what else could it be? In associative thinking we visualise the shape and form of the CD at an abstracted level in the imagination, and then superimpose that image on other abstracted templates we hold in memory (technically speaking this is called pattern-matching), and if we get a good fit we declare this as

an idea. Creative skills enable us to make various transformations (see Section 6.2 – Item 4 'Transformation') in the imagination such as scaling the object up or down in size, changing the material it is made of, multiplying the number of objects, re-orientating it etc, so the number of possible pattern-matching templates multiply. With regard to free associations for the CD we might come up with some ideas like: frisbee, pizza cutter, coaster, ear-ring, bird-scarer, light reflector etc.

Associative thinking however takes place in the individual imagination not in a group mind, and the dynamics of working in a group militates against the coherent flow of ideas in the individual. One reason for this is that the process of visualisation in the imagination is easily disrupted when other people start to verbalise their ideas. At least six other factors concerned with group dynamics have been identified in research studies that contribute to the poor performance of conventional Brainstorming (11),(12).

Figure 2 Guidelines for Effective Group Brainstorming.



The most productive method of idea generation takes place with a group when each person is isolated initially, and when there is no intra-group communication. At the end of the session all the ideas are pooled after a set time, and the whole group can now meet and work together to select the best ideas. This is described in the research literature as a 'Nominal group brainstorm' and many research studies have shown that this approach yields at least twice as many ideas, and better quality ideas compared with a conventional brainstorm (13).

The big challenge in the workplace however is in persuading managers and chairpersons etc to do brainstorming differently in meetings. Clearly it's not practical to have a nominal group brainstorm when all are assembled in a physical meeting, though in the new regime of Zoom meetings, it wouldn't be too difficult to simulate such a session.

On the assumption that the committee or steering group are assembled in the same room it's worth asking how could we get the best outcome in terms of idea generation? - and some suggestions are listed in Figure 22 above.

Comments and Discussion

Heather Somewhat: Here's one I use with PhD students to help them find new connections in their research: EXERCISE: Staying open to new relationships/making new connections in your thesis

The following exercise can help reveal previously hidden connections within your project.
1. Quite quickly, dotted across a blank piece of paper (landscape), write down 12 words that describe elements within your project. For example, a character a setting, event, a time, a component, a process.
2. Draw lines between words that may (or may not) have a relationship, pairing them up.
3. Free-write or take notes for a couple of minutes on the connections between one or two of the pairs.
4. Did you notice anything surprising or interesting?

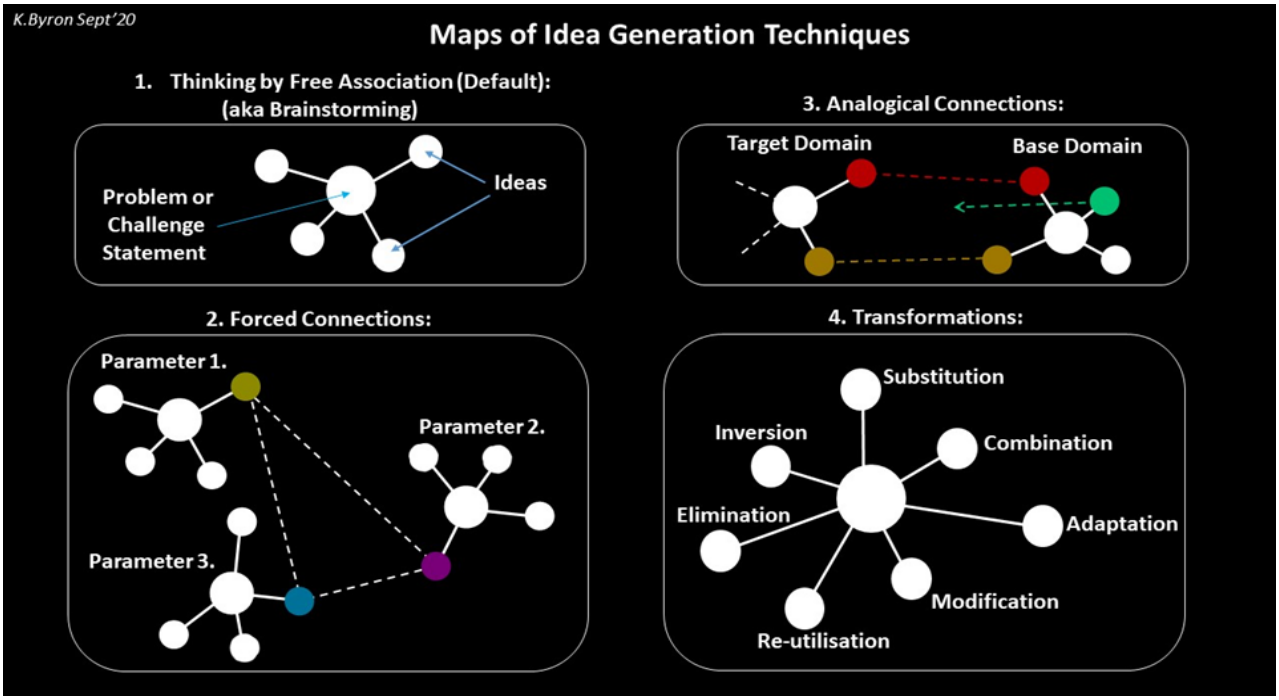
FEEDBACK: Were there any surprises? Were there any new connections you might want to consider?

TAKEAWAY: Stay open, don't fix a structure, title, thesis statement too early, just in case it stops you seeing something extra, new, more beyond. You don't have to write in linear fashion, you can dip in, write what you feel like writing today. Don't worry too much about your original contribution. You may realize what you're actually trying to say at the very last moment. It may, as Anna would say, 'have been hiding in plain sight all along'.

Kevin Byron: That's a great exercise Heather - thanks for posting. The 2nd point is similar to the technique described as 'Forced Connections', and I'll describe a variant on that later in this sub-theme.

Figure 23 provides abstracted 'maps' of the four main techniques of Idea Generation, and in these maps it is assumed that the ideas are the aggregated contributions from one or more individuals working with the common challenge or problem for which ideas are sought. Apart from Item 1 (Thinking by Free Association) which has been described in detail earlier, each of these techniques is described in more specific detail with an illustrated example. It should be noted that all of these techniques involve thinking by association, as it's the default setting of the imagination. What differentiates the four techniques however is what might be called 'the management of associative thinking'. By management this means 'where we have placed our attention to make associations'. In item 1. 'Thinking by free association', there is no management, whereas in the other three items, the attention is drawn to particular categories for finding ideas by association.

Figure 23 Abstracted Maps of Idea Generation Techniques



1. Thinking by free Association (aka Brainstorming)

This is the default method of idea generation in which a group of people find their own associative connections with a central challenge. Ideas are recorded on a flip-chart and then, at a later stage, the ideas are ranked as described in the next section on 'Idea evaluation . The pitfalls and remedies of group brainstorming were discussed in the previous section. Brainstorming tends to be applied to any kind of problem or challenge, and is still in widespread use in spite of its poor productivity **when performed in groups.**

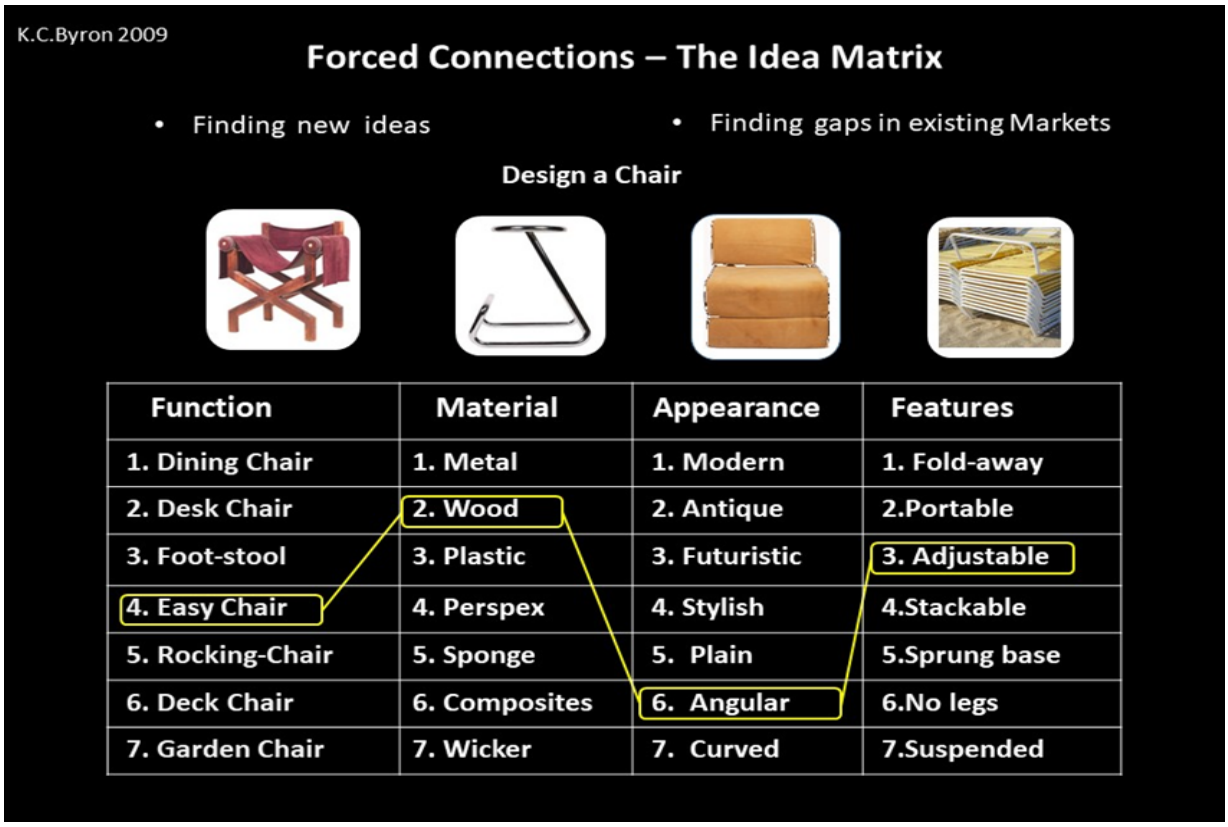
It should be noted that 'free' association is a contested notion in group brainstorming, where people are vocalising their ideas as they randomly arise. In effect when this happens that person has shifted their attention from being inwardly directed to outwardly directed, and this disrupts the inward looking attention of the rest of the group. So in a sense group brainstorming is attention chaos, and this explains in part why nominal groups (people working separately on the same challenge) always produce more, and better ideas than brainstorm groups where people work together (10,11). To find ideas by free association we need the minimum of distraction so we can retain our inward looking attention and explore the further reaches of the imagination.

2. Forced Connections

This can be applied to a range of challenges concerned with design, product-naming, business development etc. Here, any number of mutually exclusive parameters of a particular challenge are first identified, and then thinking by association is applied to each one in turn. For example applying this to the design of a new kind of chair, the parameters of a chair might be Function, Material, Appearance and Features as shown in Figure 24. below. A list of associations with each one is generated, for example under Function there could be: Dining Chair, Office Chair, Deck Chair etc. When a few associative ideas have been found for all four parameters, random connections are forced between one association in each of the four lists. So for the example this could be: Easy Chair

thinking by association is applied to each one in turn. For example applying this to the design of a new kind of chair, the parameters of a chair might be Function, Material, Appearance and Features as shown in Figure 24. below. A list of associations with each one is generated, for example under Function there could be: Dining Chair, Office Chair, Deck Chair etc. When a few associative ideas have been found for all four parameters, random connections are forced between one association in each of the four lists. So for the example this could be: Easy Chair + Wood + Angular + Adjustable. A discussion ensues to see if this combination has potential, and if so it is listed as a potential idea. Note for 10 associations in each of the 4 parameters, that means 10,000 unique combinations, though only a few of them will yield truly novel ideas!

Figure 24 An example of Forced Connections



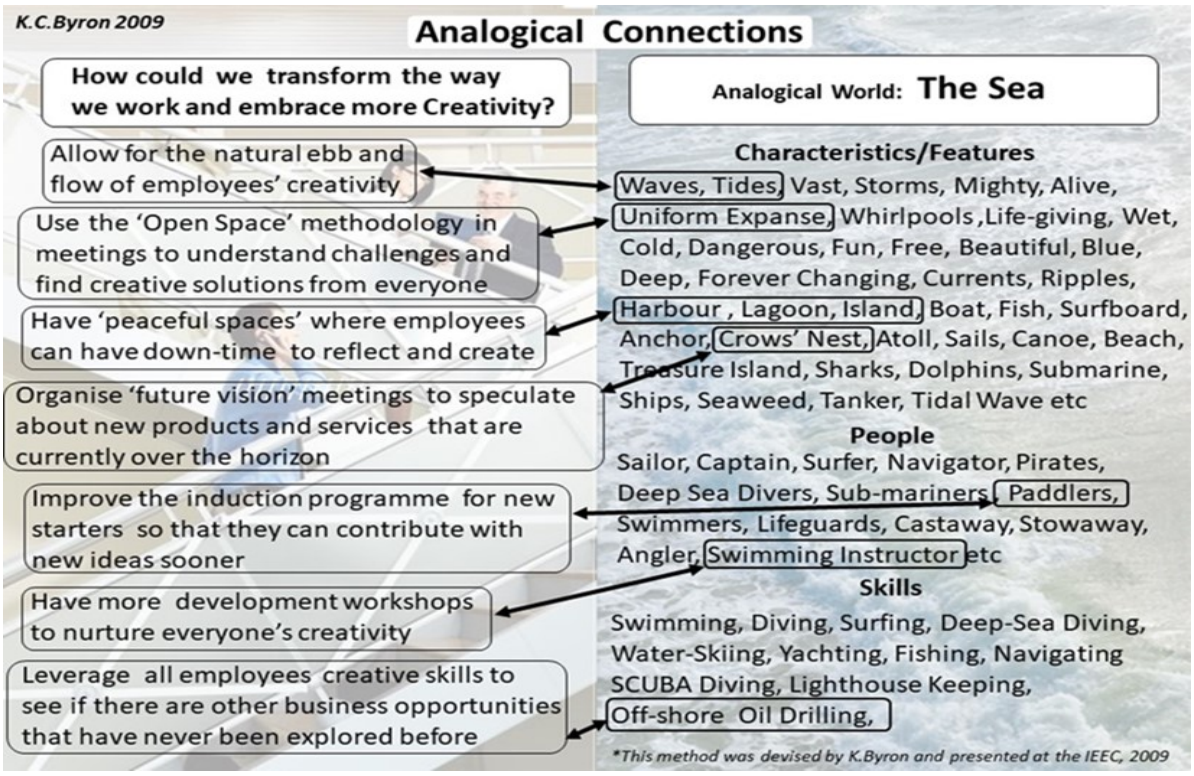
3. Analogical Connections

This idea generation technique is often applied to big organisational challenges concerned with change management and new ventures, though it is also the basis of 'thought experiments' for clarifying abstract concepts in, for example, teaching. The reasons for resorting to this technique are usually based on a sense of uncertainty with how to proceed with a particular challenge. An example of this technique developed by the author is shown in Figure 25 below. After first articulating and recording the challenge (the Target Domain), attention is then shifted to a completely different space (the Base Domain), for which there is a lot more familiarity. The most productive Base Domains are non-specialist activities for which there is common knowledge for most people, because the team involved in addressing the original challenge will all now be able to contribute more fluently.

The next step is to identify some sub-categories in this domain, and associations are then listed under each one. Typical sub-categories are 'Characteristics/Features', 'Skills' and 'People'. for example if the Base domain was 'The Sea' the associations under the category 'People' might include Captain, Navigator, Surfer etc, and under 'Characteristics' we might have Storms, Ripples, Tides etc. The challenge statement in the Base Domain typically goes: 'What are analogues of associations in the Base Domain, applied to the challenge in the Target Domain?' The Target Domain is ignored until sufficient associations are found in each of the categories in the Base Domain. Then, initially working as a group, a random selection of an association in the Base Domain is made, and a discussion ensues on the analogical equivalent of this association in the Target Domain. For example if the Target Challenge had been: 'How might we nurture more creativity in the classroom?', if the selected Base Domain association with 'The Sea' had been 'Tides', this might be interpreted through the discussion in the Target Domain as: 'We need to recognise that creativity ebbs and flows in the individual, so we need to give more time to the completion of projects. This means we should re-examine the structure of the time-table….'

It's important to note that people vary in their ability to make analogical connections, and sometimes ideas from the Base domain are taken literally and suggested as solutions in the Target domain. For example in the example above a more concrete thinker might suggest that employees go swimming regularly in order to give them a break from the office. In the spirit of 'All ideas count' this should be included in the list.

Figure 25 An Example of Analogical Connections.



4. Transformation

Professor Margaret Boden defined creativity as "The transformation of conceptual spaces", and to see what this means we need only look around us at everyday existing ideas. By asking ourselves the question: "Where did this idea come from?" and applying the different forms of transformative actions (Substitution, Combination, Adaptation, Modification, Re-utilisation, Elimination and Inversion) to earlier ideas, we quickly arrive at the fact that new ideas are transformations of earlier ones. For example a Smart phone is a wire-free (Eliminate), scaled down (Modify) version of earlier phones that integrates (Combines) other functions .

The application of 'Transformation' as an idea generation is similar to item 1 (Thinking by association), but rather than the associations being a free-for-all, a set of targeted prompts are supplied for transforming the challenge into something else. The seven types of transformation listed earlier are shown in Figure 25. These were first formulated by Bob Eberle (14) and though there is some overlap between one or two of them, they lead to many more ideas than are normally found through random, un-prompted association.

To add to the ideas found, a number of sub-prompts may be supplied for each of the seven main prompts. For example under 'Substitution' we might also ask: What can be substituted? Who else? Can the rules be changed? What about other Ingredients, Different Materials? Other processes or procedures? Another approach/ methodology? What else instead?

Some examples of creative transformations from the worlds of both Art and Science are given in Figure 26.

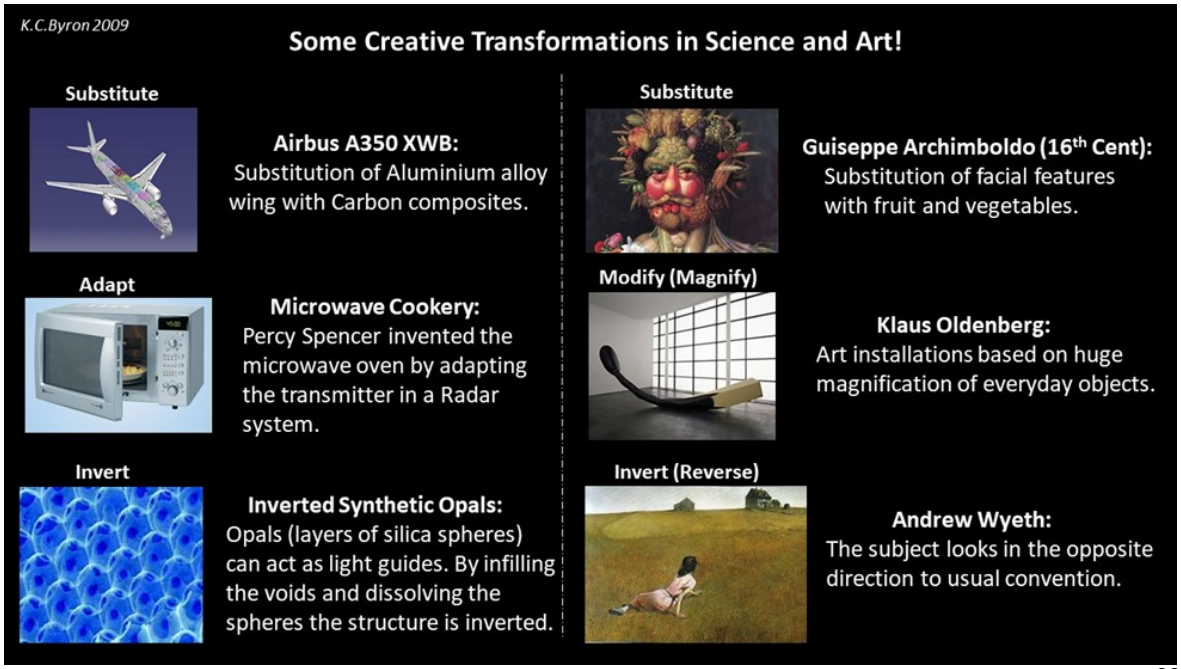


Figure 2 Examples of Transformative Idea Generation in Science and Art

Comments and Discussion

Holly Warren: Thanks Kevin Byron will read this carefully. How ideas are generated in isolation and in groups is an very interesting theme in creativity.

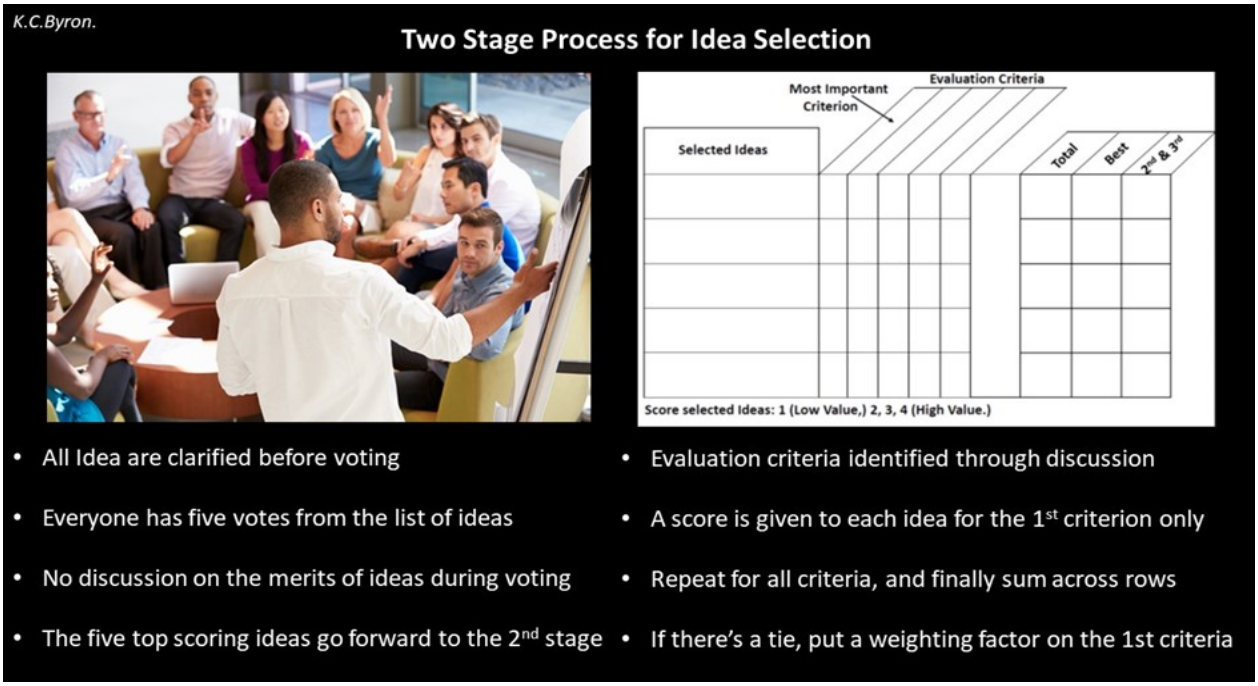
Idea Evaluation and Selection

Several groups are working together in an 'event' aimed at nurturing and applying creative thinking to a shared, 'open-ended' challenge. After first identifying the shared challenge, they then re-framed it through creative enquiry in order to get to the heart of the matter. Next they applied some idea generation techniques and produced a number of ideas that have potential to meet their challenge. The ideas are listed on flip-charts and Post-its. How do they then decide on the best idea to take forward to the final stage in the event, of action planning?

In the terminology of 'Creative Problem Solving' (CPS) this decision-making process is often referred to as convergence, and one simple way to decide on the best idea from a number of ideas, is to first narrow down the number of ideas to about five. This can be done by inviting all members of the team to anonymously vote for their personal top five ideas in the list. It may be necessary first to ensure everyone understands the various ideas, because they are often recorded in note form.

Once the ideas have been clarified, working in parallel, each team member ticks their five personal favourites independently. No discussion with others takes place during voting, and no repeat votes for the same ideas by an individual is permitted. The choices are not ranked at this stage, and when everyone has voted, the scores are added up for each idea, and the five top scoring ideas are then listed, in no particular order, in the table shown in Figure 27 below. If there had been a tie in the scores in the first part of the exercise, everyone votes again for the two that tied, and the highest scoring idea is put forward.

Figure 27 Two stage process for Idea selection.



Referring to Figure 27, the groups then use a more quantitative approach for differentiating between the quality of the these top five ideas. First the group agree on criteria that can be used to compare the ideas, and the most important criteria goes first in the angled columns shown. In order to identify the criteria some discussion needs to ensue on what success looks like with regard to the solutions for the original challenge. For example if the idea was for a new business venture, the criteria might involve parameters like 'Practicality', 'Originality', 'Cost' etc. If the idea related to solutions to a challenge for improving the university experience, the criteria might involve 'Improved employment opportunities', 'Better student-staff communication', 'More flexibility in changing course' etc.

When three or four criteria have been identified, they are written in the table in order of importance. The group then complete the table using a scoring system, and having an even number as the maximum score is useful as this avoid too many 'middle' scores that makes it harder to differentiate the totals. It's important that the table is filled one column (ie one criterion) at a time, because in the discussion that ensues on the merits of each idea relative to the criterion under review, comparisons are made, and adjustments made to ensure each column is

representative of the relative ranking of the ideas. After the scores for each of the criteria have been completed, the totals for each row (ie idea) are added up, and then entered in the table. If there is a tie for two or three of the ideas, a weighting factor is given to the score for the most important criterion. This weighting might be a multiplying factor of say 2. The scores are re-assessed, and if there is still a tie, the second criteria is weighted in a similar way. This will generally give a clear ranking of the tied ideas.

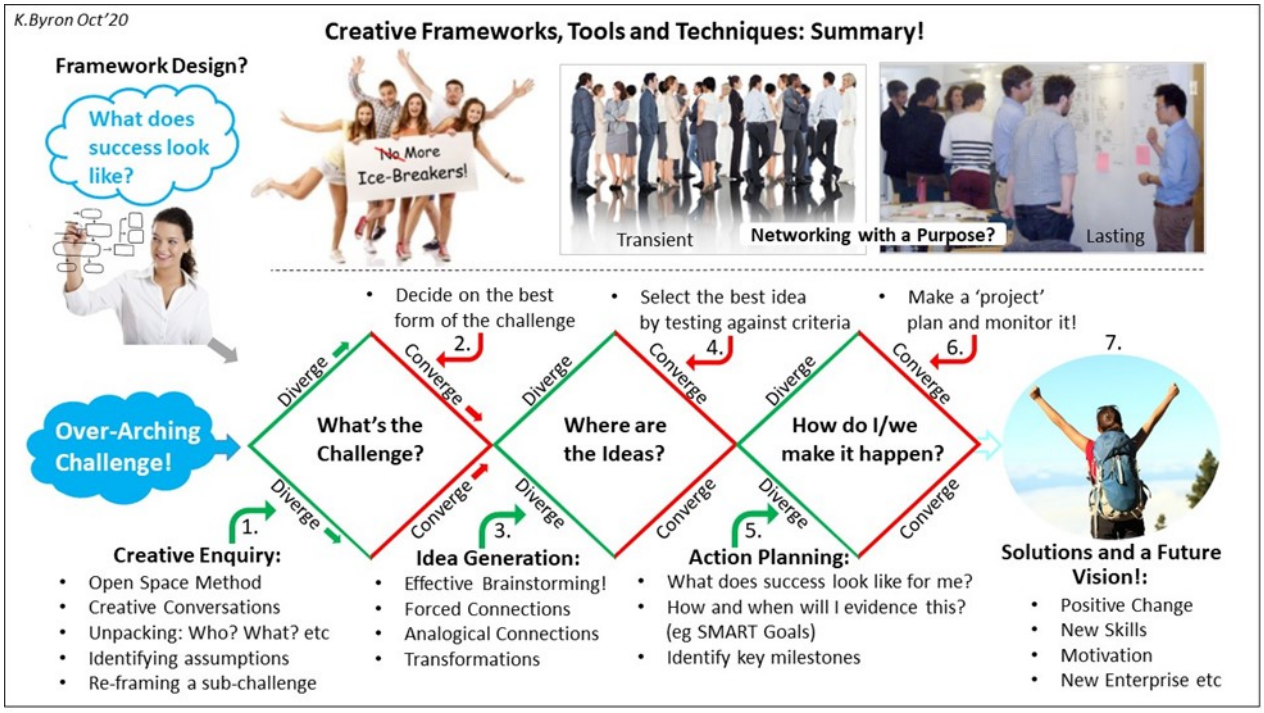
In some tests carried out by the author, this quantitative ranking technique of the top five ideas using criteria and scoring, was compared with qualitative ranking with no criteria, and simply inviting the participants to vote by ranking the ideas according to which ones they liked the best. In the majority of cases, the ideas that scored highest using criteria and scoring, came second or third using the qualitative approach. This is because people tend to vote emotionally in the absence of criteria, for what appear to be the most exciting or interesting ideas. Such ideas are often not practical, whereas the less interesting ones may be. In short, highly creative ideas are often not highly useful ideas. This technique for idea selection is used widely by commercial organisations where making informed decisions on issues is essential for keeping time and costs optimised.

Interestingly many decisions on the relative merits of creative work are made in a much more subjective way based on the more unreliable basis of 'gut feel' or 'intuition'. Whilst the outcome may be fair, if there is a panel of expert assessors with different perspectives, there is a high likelihood of bias if these decisions are left in the hands of just one individual!

Final Summary

To conclude, this general theme of 'Creative Frameworks, Tools and Techniques' aimed to explore the design and content of an event/workshop/experience in which creative thinking could be both nurtured and applied. The target audience were the current generation of students facing an uncertain future due to disruptions in their education, economic and political instability, social upheaval and unprecedented ecological challenges. Figure 28 below is a collage summarising the various sub-themes that have been discussed and shared.

Figure 28 Creative Frameworks, Tools and Techniques – Summary



Given that it would not be possible to summarise all the other valuable contributions to the discussions from other Creative HE members, this final summary is a personal perspective on the design of such an event. For a more comprehensive picture, the reader is advised to read the various comments from other members of Creative HE who kindly contributed to the discussion.

The aim here was not to go into the logistics of organising and managing such an event, but rather to identify some of the key items that might be required to make an event successful. Whilst there are many different forms of creative framework, the three main questions identified in the process shown here are representative of the essential stages that lead to the development of new ideas and the plans to implement them. To engage with these stages in practice, handouts need to be designed that provide appropriate prompts, and the attendees write their responses to them, and again this is not discussed further here. The importance of the first stage of 'Creative Enquiry' can't be over-emphasised. It's here that a specific challenge of relevance to the group or individual is identified, and that requires an equal effort in both critical and creative thinking in order to shape potential sub-themes ready for finding ideas that will both be relevant and practical.

The third stage is equally important because, leaving such an event with just a few ideas, and no plan for what to do with them would be a waste of the day. Developing an action plan, and the way in which it will be monitored, is an essential aspect of the commitment to enable people to embrace change. Action planning was not included in this discussion because this involves widely known, standard project management techniques such as Identifying SMART goals and producing a Gantt chart.

In recognition that 'Idea Generation' is often considered a more enjoyable and engaging activity, many events tend to over-emphasise this part of the process. However, the creative ideas found, are only as good as the clarity of the challenge they aim to solve, and the commitment to a plan that will bring them to life.

Clearly there's a great deal more to the design of a specific event than is shown here, and no doubt some of these considerations will appear in future discussions. Hopefully some of the material discussed here will be of value to other members of the FaceBook group #creative HE and In the meantime I wish to thank all who contributed to this big theme for all your ideas, personal reflections and comments. Special thanks are also due to Norman Jackson for providing the opportunity for me to lead on this conversation, and to add to the Creative Academic Magazine series.

Comments and Discussion:

Holly Warren: Creative Enquiry. Such a wonderfully challenging aspect of how the mind works. The more we learn about the kind the more answers we compose that move us to more questions. Let the mind never stop fascinating us. Thanks Kevin Byron.

Kevin Byron: Thanks Holly, I would argue that we spend a lot more time in 'Creative Enquiry' than we do in generating creative ideas. Indeed I'd go so far as to say if a challenge has been properly hammered into shape, creative ideas will naturally ensue with little effort. Furthermore, when ideas are not forthcoming, that is diagnostic of the fact that the challenge has not been clarified sufficiently, or scaled down to a workable size.

Holly Warren: Kevin Byron generating ideas can be difficult if connections are not made in a meaningful way. This aspect needs attention as you suggest.

Kevin Byron: Holly Warren – Agreed…….!

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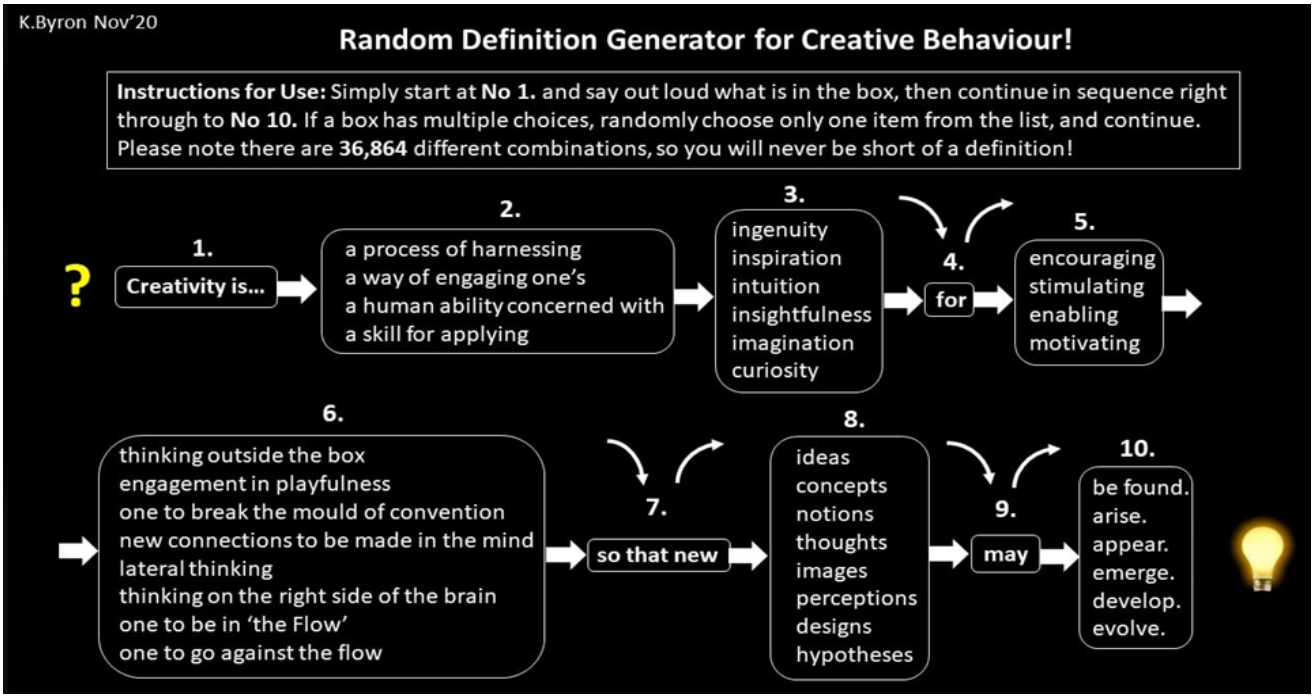
What is the Value in Defining Creativity?

Norman Jackson In early November Kevin Byron posted an interesting diagram (Figure 1) with the words "36,864 Different definitions of Creative Behaviour!" Like all good synthesis tools it made me think and I quickly came up with other possible boxes and words that might be included that reflected my own interests and beliefs. It made me realise the enormous possibilities in the way we see, experience and define creativity and I contrasted this with an article I had just read by Matthew Hirschey who wrote *" A generally agreed upon definition for creativity involves the production of novel and useful 'products' (1).*

Figure 1



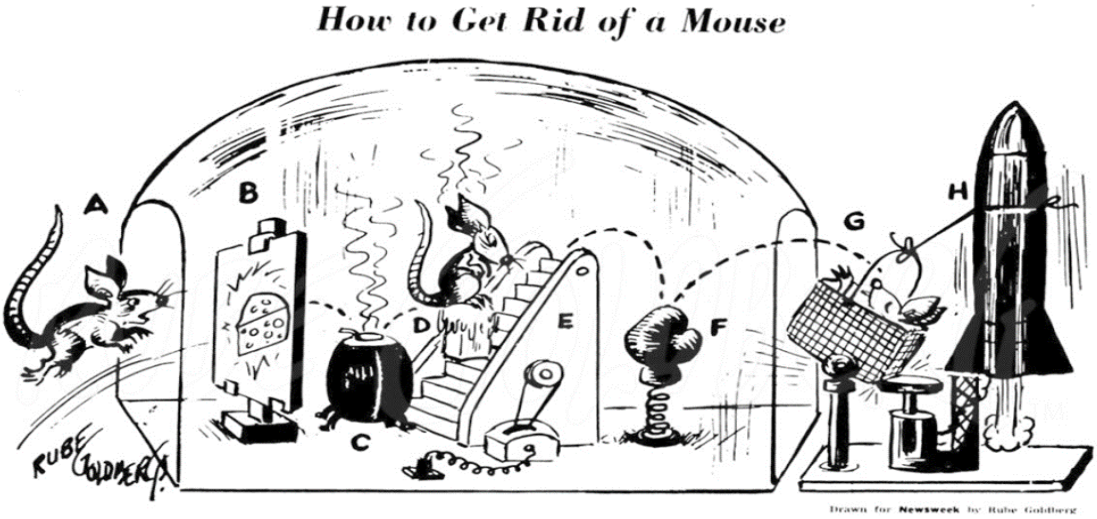
My curiosity aroused I posted a question in the #creativeHE forum, *"I am wondering what your preferred definitions of creativity are and why you prefer them?"* adding, *"Do you agree with Matthew Hirschey that 'creativity involves the production of novelty and value?"* https://www.matthewhirschey.com/articles/creativity-defined

I didn't get many definitions-perhaps most people don't use such abstract constructs. But the questions generated a healthy conversation and as it unfolded I added some new ideas to my own constructs.

Source

1) Hirschey, M (2020) Creativity Defined Available at: https://www.matthewhirschey.com/articles/creativity-defined

This imaginative way of catching mice pictured above, designated "the best mouse trap" by cartoonist Rube Goldberg, can be described as: clever, complicated, absurd; but is it creative? (1)



The best mousetrap by Rube Goldberg: Mouse (A) dives for painting of cheese (B), goes through canvas and lands on hot stove (C). He jumps on cake of ice (D) to cool off. Moving escalator (E) drops him on boxing glove (F) which knocks him into basket (G) setting off miniature rocket (H) which takes him to the moon.

Teryl Cartwright My current definition of creativity is novel, useful, and timely. I point to those who were ahead of their time and not considered creative until later when a culture changed or community assessed creativity differently. There are also others whose ideas aren't considered creative because their ideas are not novel (others came up with the same ideas which the person was not aware of) or not useful (the context or implementation was not suited to a time or place).

While my addition to the western definition of creativity does cross into creativity of personal versus corporate in the growth and practice of creativity, timeliness also has a person able to look back and assess one's own products to Redefine creativity.

Creativity is the one field that must keep changing itself or it no longer is "novel and useful." Yet paradoxically if we change its definition to be more novel and useful, creativity may end up being no longer novel and useful.

> **Norman Jackson** So are novel, useful and timely for a specific context or situation, or does they transcend particular contexts and situations?

Kevin Byron A lot of the debate and indeed complexity of definitions of creativity arises through the convolution of creative behaviour with creative outcomes. With regard to outcomes, the standards of peer review and intellectual property rights protection ensure a secure assessment of the originality of ideas that undergo some form of public scrutiny. However I don't believe we are reliable assessors of our own alleged creative outcomes. The assessment of creative behaviour that could lead to a clear definition, is much more conflicted. A great deal of so-called creative behaviour doesn't have a creative outcome, but that's not to say it shouldn't be encouraged. Furthermore it is possible for AI to produce original outcomes, but we can't really say that a machine is behaving in any way like a human, if at all. We can't also be secure in knowing what constitutes creative behaviour in a human. For example it is still not known whether a 'Eureka!' moment is a creative act, because many original ideas arise without a Eureka moment! and many Eureka moments lead nowhere. I tend to take an Occam's razor approach and stick with what works, and 'Ideas that are original' still remains a workable definition in terms of outcomes. Furthermore as Margaret Boden defined it - the transformation of conceptual spaces - also defines outcomes clearly too at a more specific level. The time factor, as Teryl has pointed out, is important though and it's worth asking why intellectual property has a finite lifetime eg Copyright remains valid up to 70 years after the death of the originator, and patents last for 20 years after they have been filed. Does that imply that 'originality' has a shelf life? or that it is ok to re-invent older ideas and re-claim their originality after a sufficient time has elapsed?

> **Norman Jackson** So does your working definition involve 'the production of novelty and value?'
>
> **Kevin Byron** This is also unclear - the addition of ‘value’ or ‘useful’ to the definition is adding a latency to originality that might not be upheld with the passage of time. For example many academic publications and many patents have little if any explicit value. However it’s impossible to assess implicit value, so for example a publication that has not been subsequently cited may have been instrumental in the thinking of another researcher such that they then do some groundbreaking research.

Portia Ungley I would disagree vehemently! Creativity isn't about usefulness - it is about curiosity, playfulness and vim. To make creativity about innovation is to ignore the creativity of scrapbookers, hobbyists and amateurs - it makes it something to achieve and monetise when we can cook creatively, love creatively, account creatively. We are huizinga's homo ludens and dissanyake's homo aestheticus. And to think is to be creative, so also homo sapiens. Creativity is no silver bullet for the ills of the world but it makes life worth living.

> **Norman Jackson** Thank you for your perspective Portia Ungley - so when we come down to the everyday creative worlds of individual scrapbookers, cooks and gardeners is there any room for 'the production of novelty and value' in their creative acts?
>
> **Portia Ungley** Norman Jackson novelty is often the mother of discontent in the classroom but we definitely need creative education - either the bar for new is so low that it is barely worth registering or else most of us are doing nothing creative in the classroom. Also novelty talks about the new and we are surely past viewing the neoliberalism idea of new and growth as intrinsically or sustainably positive? Value meanwhile, are we talking bordieusian cultural, social or just fiscal? Value is about perception and if that perception of creativity is about novelty and/or value, it would be deeply damaging to the apprenticeship of an UG or PG degree, in the arts & humanities, but also STEM. Knowing the worth of your creative outputs is different to understanding the social, cultural and mental health value of creativity. Being good at it is irrelevant. So perhaps I am uncomfortable with that definition as it reduces the creativity of everyone, whether trained or not, to if it can be monetised. Additionally to that, an axiological imperative to turn the value into something quantifiable which RATs and all sorts of other metrics have utterly failed to agree on, and we have a situation where creativity has morphed into the creative industries and its economic addition to UK GDP (and talk of creatives retraining in real jobs). I want my students to take risks, to learn through iteration, because that is where creativity lies - genius is outmoded. If I tell them that their creativity can only be measured by novelty and value, what kind of a message am I giving about what constitutes HE? Also that mouse trap is entirely creative - how could it be anything else? - but it is discounted by the terms novelty and value - to me that says the definition of creative is wrong, not Rude Goldberg.
>
> In my research, I have gone from critical thinking through creativity to play as the fundamental to sustainable HE - without it in our studies, our work, we become anhedonic at which point we exhibit symptoms similar to sleep deprivation. To reduce such a vital physical and psychological function to novelty and value is really problematic on that basis.

Andrew Penaluna I am particularly interested in how these definitions align to neural activity, and through the how those insights might help us to educate. As an artist I want personal satisfaction, so the act is in itself motivational, thus serves its own purpose. As a designer I seek to solve other people's problems, so the motivational aspect shifts, and is more reliant on being able to to map through tools like the RAT test.

Kevin Byron By definition a creative act must indicate a new connection, or a shift in the existing pattern of connection between different neural nets. However there is no diagnostic measurement technique that has sufficient temporal and spatial resolution to be able to verify that such an event has taken place. At best fMRI can resolve neuron activity down to about 3 cubic mm which amounts to about 250,000 neurons, and the temporal resolution is about 1 to 4sec.

Andrew Penaluna Activity can still be monitored and I find it fascinating Kevin, especially in terms of predication and micro molecular structuring. https://www.sciencedirect.com/.../pii/S1053811920302445...

Kevin Byron If a research paper is submitted for publication the peer reviewers are looking for two things that define its originality (ie the work as a creative act) 1. It must not have been published before. 2. It advances the field. The former is relatively easy to assess, and the latter is harder to determine. These criteria are in my view sufficient to justify keeping the definition in terms of outcome simple.

Norman Jackson We are back to the cultural versus individual contexts for creativity Kevin Byron Of course in high culture such as creating new knowledge in a disciplinary field, people look for originality and whether what is produced has value in terms of extending understanding. But at the everyday, every person, every context and situation level - do we really pursue originality?

Kevin Byron I agree, though I took the extreme example of an academic paper to represent all other forms of peer assessment of creative outcomes. This includes literature (Booker prize etc), and artistic (Turner prize etc), IPR assessments by lawyers etc. There has to be clarity on what we mean by creative in these cases, even though it may not be a consensus by a wider group of specialists. In the classroom of course it can be divisive to draw a hard line about the originality of a creative outcome, and here it's more important to place the emphasis on nurturing creative behaviour. Nevertheless there are national school initiatives that reward originality in terms of outcome such as UNESCO essay competitions, Young Engineers etc. As we develop we hopefully move further along the Kaufmann's 4C's continuum and the emphasis shifts from creative behaviour to creative outcomes so the definitions need to be adapted to the circumstances. Of course outcomes are not about winning prizes, and the majority of genuinely original creative works are simply part of the daily work of a variety of professions. One of the perennial problems with defining creative behaviour - in the sense that we have some way of knowing it's creative - is in defining what is not creative behaviour? This has never been satisfactorily answered and until it is it implies everything we do is creative and so there's no need to define it!

Paul Kleiman When I did my PhD I created a survey and collected 12 different definitions, and asked people to agree/disagree. These were the top five:

1. Creative thinking involves imagining familiar things in a new light, digging below the surface to find previously undetected patterns, and finding connections among unrelated phenomena. 95%
2. Creativity is the process of bringing something new into being. 88%
3. Creativity involves being imaginative, going beyond the obvious, being aware of one's own unconventionality, being original in some way. It is not necessarily linked with a product-outcome. 84%
4. Creativity is the application of knowledge and skills in new ways to achieve a valued goal. 83%
5. For something to be creative, it is not enough for it to be novel: it must have value, or be appropriate to the cognitive demands of the situation. 63%

Interesting that the top three said nothing about value.

Kevin Byron Isn't 'new'[=] original? unless we confine it to new to ourself?

Andrew Penaluna New to whom?

Kevin Byron Andrew Penaluna We define newness by where the creative act is placed on the Kaufmann 4Cs continuum. At the lower end it's relative to ourselves. At the other end it's determined by other people.

Norman Jackson Paul Kleiman sorry how did I miss that.. But there are 3 things in the third proposition that are not necessarily about originality so I guess we do not know whether originality was at the core of what they were agreeing to.

Norman Jackson Paul Kleiman looking again I think value is also implicit in why people are engaged in these acts of thinking and doing.

Paul Kleiman Norman Jackson yes, but value works both ways. The focus of the creativity is something people obviously value, and what they produce also has value to others.

Norman Jackson Of course Paul Kleiman I think it might even be more complex for example we might embark on a project given to us that we do not value but become convinced through the process that it is of value and change our own sense of values accordingly.

Marta Davidovich I love this question! I am a life-long creativity practitioner and educator. I launched my research in 2010 after hearing the scholarly definition of 'novelty and usefulness' for the first time. My doctoral work was focused on reimagining the way the lived experience of human creativity is defined, inspired and encouraged moving forward in the 21st century. It includes 165 diverse definitions from the 50's to the present, and notes novelty, originality, and usefulness are terms used to evaluate products or outcomes of creativity rather

than defining the multi-phenomenon construct. Creativity lives in the process, not the product, and it unfolds over time. The word 'define' literally means: "to describe the nature, scope or meaning of something." The words 'novelty and usefulness' are appropriate for describing non-human creativity because it only relates to judging outcomes. The lived experience of human creativity - on the other hand - is embodied, dynamic, expressive, imagination and intuition informed, and actionable.

At the core: "Creativity is the person-centred process of imagining possibilities and taking embodied expressive action to make your ideas real" (1). I also believe no definition of creativity is the be all, end all. It is one perspective. Use it. Challenge it. Adapt it. Play with it. Try it on for size. Improve it. I would love hearing definitions that inspire you to step into the process of creating with joy. The world needs more creativity encouragers, awakeners, and positive influencers than it does critics and people who judge and discourage. What is your personal experience of creativity? And what conditions free you to explore new directions? All humans are born dreaming and imagining, expressing and creating. It is also important to recognize: All art requires creativity, but not all creativity requires art. I'd love to know what definition(s) of creativity resonates with you and inspires you to take embodied action.

Source

1) Ockuly, M.D. (2019) Reimagining the way the lived experience of creativity is defined, inspired and encouraged in the 21st century: A creativity practitioner/educator's heuristic inquiry. Doctor of Philosophy in Psychology Dissertation, Saybrook University. Available at: https://www.academia.edu/40627513/ REIMAGINING_THE_WAY_THE_LIVED_EXPERIENCE_OF_CREATIVITY_IS_DEFINED_INSPIRED_AND_ENCOURAGED_IN_THE_21ST_CENTURY_A_CREATIVITY_PRACTITIONER_EDUCATORS_HEURISTIC_INQUIRY 2 Sela-Smith, S. (2002). Heuristic research: A review and critique of Moustakas's meth

Kevin Byron Marta Davidovich A great deal of art is the expression of talent not creativity. Talent is the ability to do things well, and creativity is the ability to do things differently. If someone is talented at painting in the Impressionist style, I would ar… See more

Kevin Byron Marta Davidovich To quote from your post: 'Creativity lives in the process, not the product': I would argue that creativity definitely does live in the product (or outcome as I prefer to label it). In the relatively recent developments described as "second-generation cognitive science" the mind is considered to occupy a space, and have a temporal existence that is much bigger than the brain, and is not only embodied, but embedded, enacted, and extended. To quote from a review of the book: The New Science of the Mind: From Extended Mind to Embodied Phenomenology, by Mark Rowlands: "…and that what we call "the mind" cannot be cut off from our corporeal existence in the world and our interactions with it."

When we have produced something which involved some degree of creative action, it lives on outside ourselves because it is influencing not only ourselves but others, and the way the future is evolving, and we remain connected with it.

A good example of this is brought to our TV screens in the UK every week in a programme called 'The Repair Shop'. Here people bring lifeless, dilapidated and broken objects to a workshop where experts lovingly repair and restore them. Each object has a story attached to it that describes the relationship (usually a family connection) between the current owner, and the often deceased person who either made the object or first owned it. When these objects are repaired, the owners return to the workshop and often shed a tear as they delight in the experience of the original owner being brought back to life in their minds through this newly restored object.

We are in part what we do, and rather than our creative outcomes being disembodied, they are living 'extensions' of ourselves no matter how distant in space and time. The artists' portfolio, our qualifications and experience summarised in our CV, and the things we write on #creative HE are in part living extensions of ourselves. But of course there is also much more to who we are that extends way beyond the internal workings of an imaginative mind. Indeed our sense of self is animated through extended relationships with others, and what we create influences those relationships.

Andrew Penaluna That last bit is especially useful Marta Davidovich 😉

Paul Kleiman Marta Davidovich I would dispute 'all art requires creativity' but that requires going down the rabbit hole that is 'what is art? ☺

Norman Jackson I believe I am always seeking novelty – tweaking stuff here and there so an idea is a bit different or an experience feels a bit different in order to sustain interest and show myself I'm alive. Its part of playing in and with everyday life. I rarely set out to be original and I see myself as being creative in a way that connects with a universe of small acts of novelty rather than acts and products that are truly original. And perhaps that is the nature of small-c.

I like Carly Lassig's Grounded Theory of Adolescent Creativity which comprises the core category, "Perceiving and Pursuing Novelty: Not the Norm. This core category explains how creativity involved adolescents perceiving stimuli and experiences differently, approaching tasks or life unconventionally, and pursuing novel ideas to create outcomes that are not the norm when compared with outcomes achieved by their peers." (1)

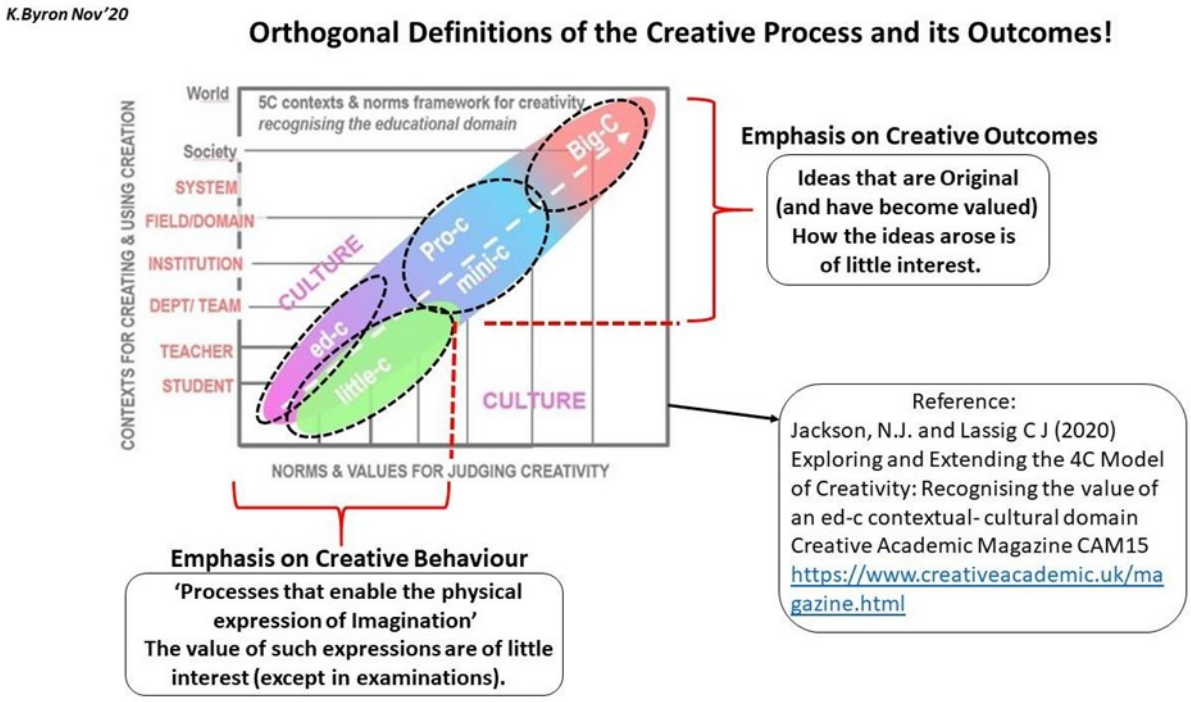
I think people enjoy and gain fulfilment from pursuing novelty not the norm (either their norm or the norms of people around them) and this is a much more useful and honest representation of what being creative means to most people most of the time.

Does this make sense to anyone else?

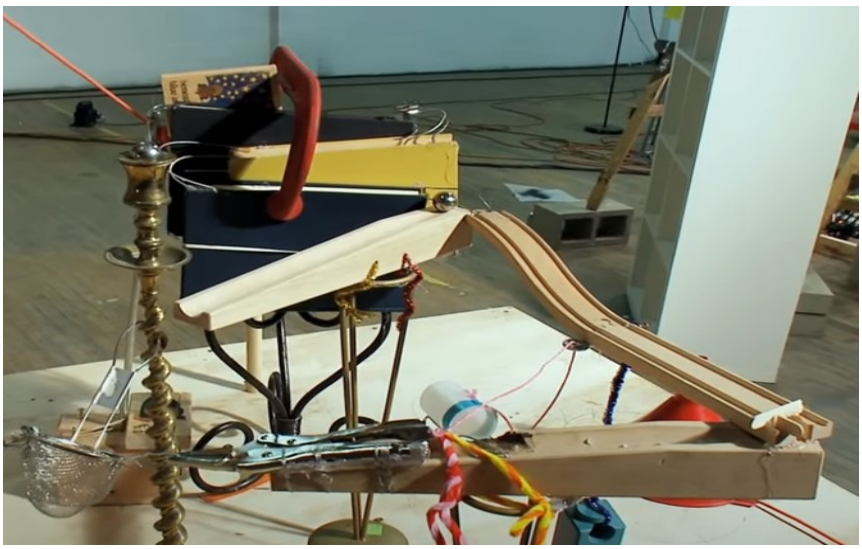
Source

1) Lassig, C. J. (2012) Perceiving and pursuing novelty : a grounded theory of adolescent creativity. PhD thesis, Queensland University of Technology. Available at: https://eprints.qut.edu.au/50661/

Kevin Byron In the image below I've aimed to clarify the problem of defining creativity in a generalised way. This is based on Norman Jackson's extended model of Kaufmann's 4C description. People involved in nurturing 'p' (personal) -creativity tend to be interested in process rather than outcomes, whereas those involved in contributions to 'h' (historical) -creativity are more interested in outcomes. So as in all dilemmas for which there is no single 'catch-all' definition the answer is 'it all depends.....' and those dependencies are illustrated here. The big problem however for the lower 'c' regions comes in finding a definition that can discriminate between that which is creative behaviour and that which is not! I believe this requires knowledge that is currently inaccessible. That is to say, what is actually going on in the mind when someone is expressing what arises in their imagination. If the outcome is unpalatable, negative or destructive is it still creative? Definitions should be both inclusive and exclusive (in this case of things that are not creative) in order for them to be workable. This is far easier for the 'Creative outcomes' end of the graph.



Norman Jackson Is this novel, original, useful, creative? Or, like the best mouse trap in the world in Matthew Hirschey's post - clever, complicated, absurd - but is it creative in the sense of original and valuable? https://www.youtube.com/watch?v=qybUFnY7Y8w&feature=emb_logo



Andrew Penaluna Can I work that out later... clearly a 'borrowed' or re-appropriated idea. I just want to enjoy it again 😉

Kevin Byron Not novel as the central idea has been done many times before, and I suspect it originated with Mr Heath Robinson. Creative? - yes! - because the novel idea has been transformed with lots of new ideas. Useful? - Yes - because it was fun, entertaining and ridiculous.

Paul Kleiman Here's the 'backstory' to that OK Go video. https://www.wired.com/2010/03/ok-go-rube-goldberg/

Norman Jackson Love the narrative Paul Kleiman... so we are now into a cast of millions (well 60!) to make this machine work. So knowing the backstory does it help us understand whether something is creative or not?

Paul Kleiman I think one of the keys here is the difference between imagination and creativity. Ken Robinson's view was that creativity differs from imagination, which is the ability to bring to mind things that aren't present to your senses. He said that creativity involved putting your imagination to work. It's like the

executive wing of imagination. You can be imaginative all day long and never do anything. To be creative, you have to do something, make something, create something.

Marta Davidovich True. Imagination with out action and application in some form is not creativity. But there is no creativity without imagination. As Alex Osborn famously said: Creativity is applied imagination. Stanford's Tina Seelig wrote a book about it in 2015 titled: Insight Out: Get Ideas Out of Your Head and Into the World, published by HarperCollins.

Kevin Byron Paul Kleiman It's conceivable that parts of the Goldburg machine were constructed just by tinkering with artefacts that were in the workshop, thereby by-passing any imaginative intervention!

Norman Jackson Yes lots of imaginations Paul Kleiman but these people did something more than imagine they turned their mental images into a new machine. I think the standard definition forces us to think about product. Corazza (1) argues for a dynamic definition of creativity "Creativity requires potential originality and effectiveness" that takes account of the process within which creative achievements might, or might not, emerge. Reflecting that the production of something that is truly original (like the first electric light bulb) required thousands of hours of effort that goes totally unnoticed in the standard definition which just looks at the result. The creative achievement lies in the effort as well as the outcome.

Source
(1) Giovanni Emanuele Corazza (2016) Potential Originality and Effectiveness:
The Dynamic Definition of Creativity, Creativity Research Journal, 28:3, 258-267
https://www.tandfonline.com/.../10.../10400419.2016.1195627

Marta Davidovich I agree strongly with Corazza's inclusion of 'dynamic' relating to creativity. He also inferred creativity lives, unfolds, and is situated in the process, rather than the product or outcome.

Josefina Ramirez Creativity as imagination put into action to "create" and "produce" something with what is imagined.

I don't only see creativity as the act of coming up with something new.... but I see it specially as the ability to use or develop, something well known , old and probably not seen as creative , in a new, not predictable setting or situation, improving it and enhancing it.

Teaching In a distance setting for early years, has proven to me that when you look at a very old, well known situation, but look at ways to apply it to a new setting, it becomes a highly creative mome

Norman Jackson I just came across this interesting article aimed at developing AI to judge the creativity of a product. Here is an extract from the article

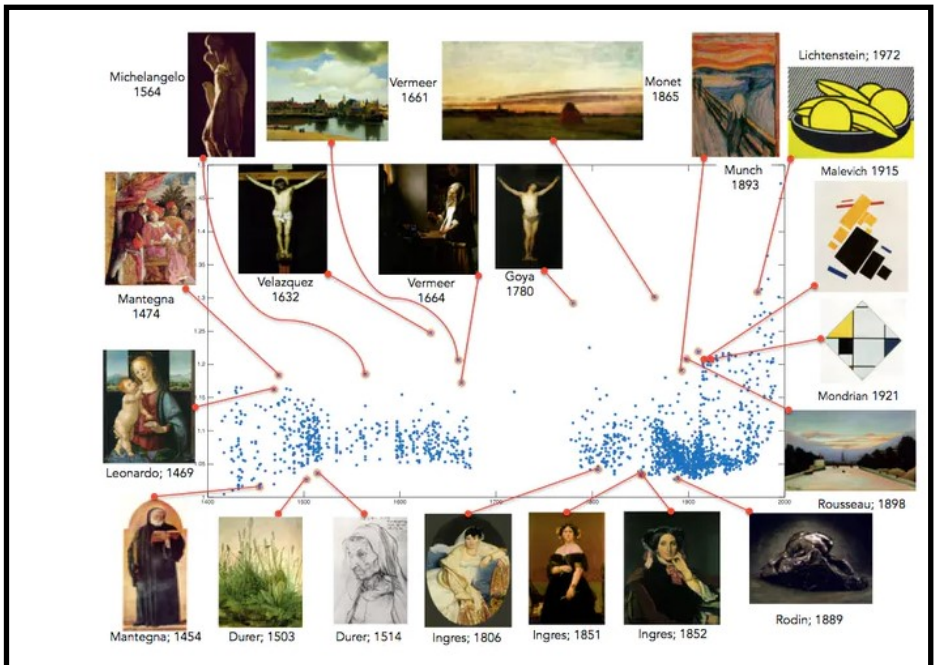
HOW IS CREATIVITY DEFINED?

Of course, the algorithm depended on addressing a central question: how do you define – and measure – creativity?

There is a historically long and ongoing debate about how to define creativity. We can describe a person (a poet or a CEO), a product (a sculpture or a novel) or an idea as being "creative."

In our work, we focused on the creativity of products. In doing so, we used the most common definition for creativity, which emphasizes the originality of the product, along with its lasting influence.

These criteria resonate with Kant's definition of artistic genius, which emphasizes two conditions: being original and "exemplary."



graph highlighting certain paintings deemed most creative by the algorithm. Author provided

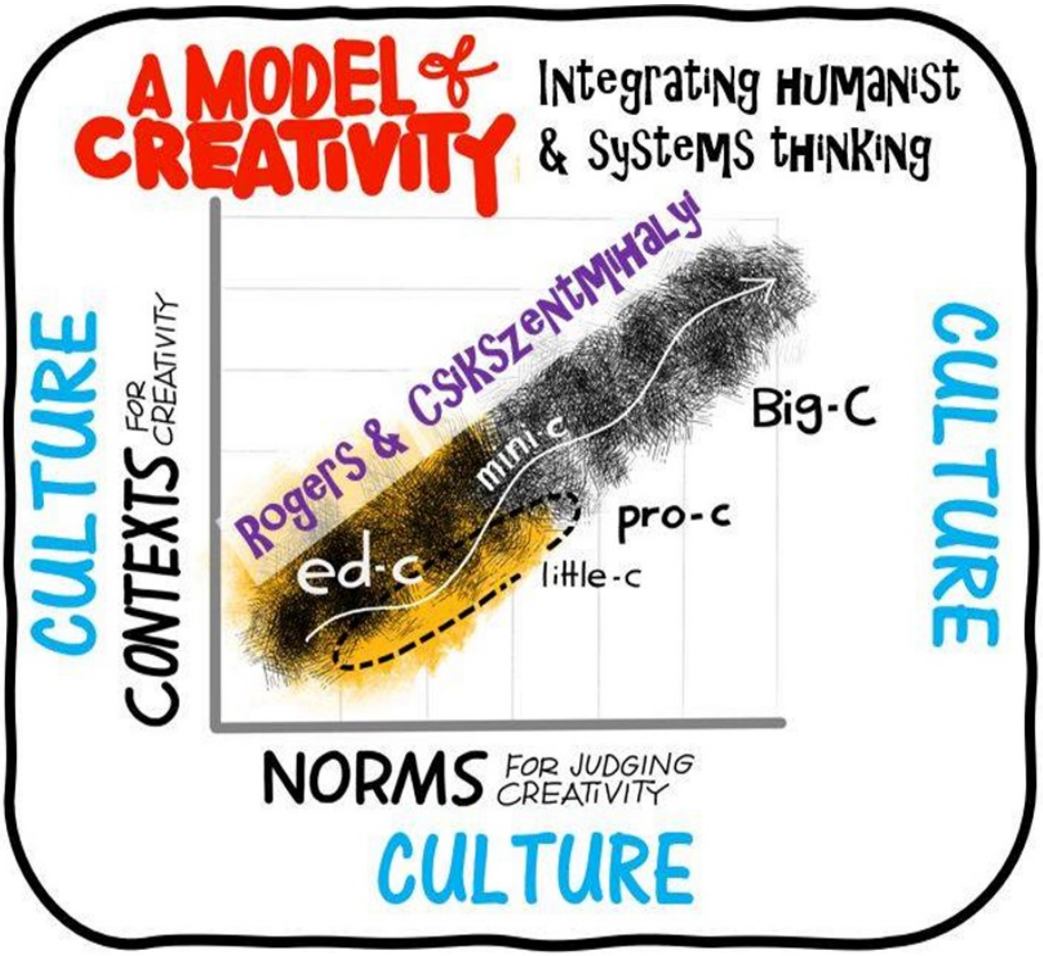
They're also consistent with contemporary definitions, such as Margaret A Boden's widely accepted notion of Historical Creativity (H-Creativity) and Personal/Psychological Creativity (P-Creativity). The former assesses the novelty and utility of the work with respect to scope of human history, while the latter evaluates the novelty of ideas with respect to its creator.

https://theconversation.com/which-paintings-were-the-most...

Paul Kleiman Norman Jackson The article makes clear that the people writing the algorithm are only interested in Big-C creative products and people. It would be interesting to see what the algorithm makes of Duchamp 'Fountain' (the (in)famous urinal), voted by art experts as the most important/influential work of modern art.

Norman Jackson Yes it does Paul Kleiman. I agree that they tackled one of the easiest products as well. Perhaps the most interesting point they made was if you can define something you can create an algorithm to evaluate it. But I agree defining something at the personal subjective level would be a far greater challenge. Perhaps also we should also count ourselves lucky that a machine can't do this.

Norman Jackson: Working with Creativity: Are we navigating between two different perspectives, philosophies and definitions?



The two different perspectives on the phenomenon of creativity and the way we perceive and define it are captured in the thinking and writings of 1) Carl Rogers who approaches creativity from a humanist, person- and individual- centred therapeutic perspective and 2) Mihaly Csikszentmihalyi who approaches creativity through the lens of individuals acting in systems and cultures. Kristen Bettencourt (3) neatly captures the philosophies of these thinkers and these notes are taken from her article.

Rogers (1) defines the creative process as "the emergence in action of a novel relational product, growing out of the uniqueness of the individual on the one hand, and the materials, events, people, or circumstances on the other" (1 p. 251). Rogers points out, "the very essence of the creative is its novelty, and hence we have no standard by which to judge it" (1 p.252). Rogers leaves room in the definition of creativity for the creator to define whether the expression is indeed novel, going as far to say that anyone other than the creator cannot be a valid or accurate judge. This is in contrast to Csikszentmihalyi's emphasis on the creative expression serving to transform the culture or the domain.

Csikszentmihalyi (2) "creativity does not happen inside people's heads, but in the interaction between a person's thoughts and sociocultural context. It is a systemic rather than individual phenomenon" (2 p.23). Csikszentmihalyi tells us "To be human means to be creative," he defines creativity as "to bring into existence something genuinely new that is valued enough to be added to the culture" (2, p.25), and "any act, idea, or product that changes an existing domain, or that transforms an existing domain into a new one" (2 p.28). The word "creative" is given to expression seen as novel in relation to the surrounding culture, domain, or community, and that is novel enough to create change within that culture, domain, or community.

It seems we have to accept both of these ways of thinking about creativity and work with both constructs when trying to make sense of it. In other words we have to be able to accommodate both Rogerian and Csikszentmihalyian philosophies into our sense making in the manner crudely depicted in the attached figure.

Sources

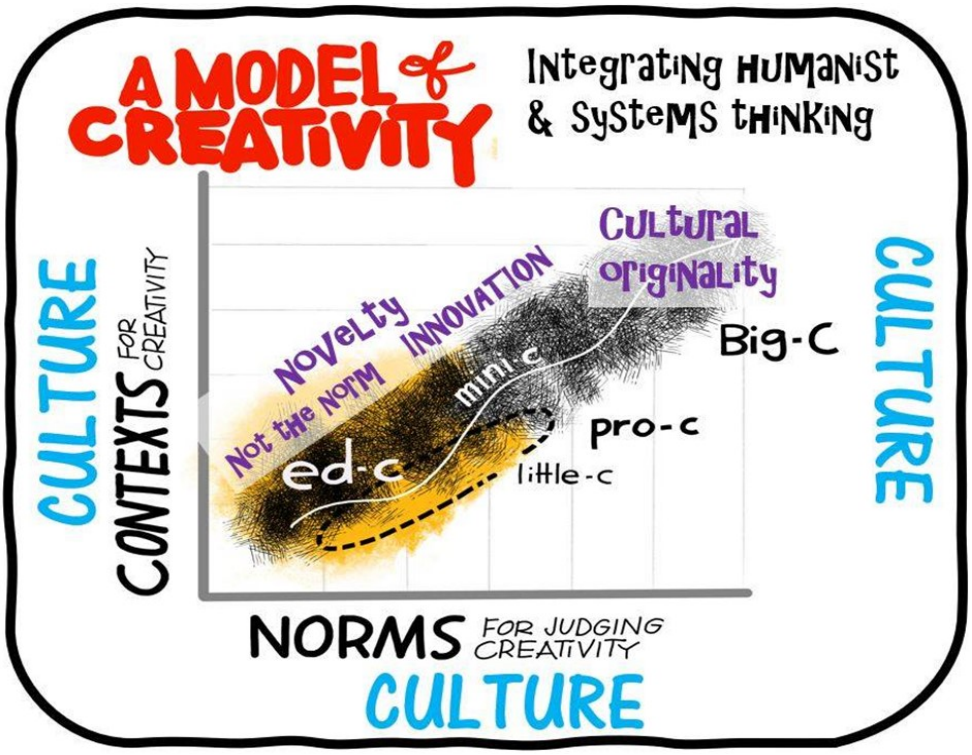
1) Rogers, C. (1954). Toward a Theory of Creativity. ETC: A Review of General Semantics, 11, 249-260.
2) Csikszentmihalyi, M. (1996). Creativity: Flow and the Psychology of Discovery and Invention. New York: Harper Collins.
3) Bettencourt, K (2014) Rogers and Csikszentmihalyi on Creativity The Person Centered Journal, Vol. 21, No. 1-2, 2014 https://www.adpca.org/.../Bettencourt,%20Kristen%20(2014)%20

Paul Kleiman It seems that we're dealing with a continuum of practice so that it's not so much either/or but both/and. Czikszentmihalyi is looking at the Big-C end, Rogers is taking a more holistic view.

Working with creativity: Are we navigating between novelty that is new to individuals and originality that is unique to culture?

Norman Jackson: One of the challenges of creativity – perhaps the biggest challenge is to comprehend it as a phenomenon that embraces the acts of individuals that have significance and meaning only to them, and the acts of creative giants who quite literally change the way we see and experience the world at a cultural or cross-cultural level.

In my earlier post, using the 5C adaptation (1) of James Kaufman and Ron Beghetto's 4C model of creativity (2) I tried to show schematically how we can embrace the humanistic individualistic view of creativity typified by the thinking of Carl Rogers (3) and the systems cultural way of thinking typified by the thinking of Mihaly Csikszentmihaly (4).



I'd like to take this reasoning a step further in the context of the question I posed at the start about novelty and value. I think we can use the 5C framework to show that at the little-c ed-c part of the continuum we are concerned with novelty and value that are defined and understood by individuals, or individuals and their immediate contacts – like family, teachers and peers. The appropriate concepts of novelty in this context is the quality of being different, new, and unusual it is not the quality of being unique or original. As Carly Lassig (5) discovered in her grounded theory study of the creativity of adolescents, novelty is about behaving, performing and producing outside what is the accepted norm.

As we move along the continuum into the realm of expertise, for example in a work domain, novelty is often seen in the context of product innovation – the production of useful products that are, in some way, different to what existed before. Mostly these are incremental changes to things that already exists but sometimes they are original to a market. But novelty in the domain of expertise is also relevant to the production of new practices, performances, processes – for example bringing about change in an organisation. Again there are going to instances of true originality that are recognised in an organisation, environment or domain. The most creative novel acts (Big-c) result in changes that affect one or more cultural domains and they are widely recognised for their originality.

Using this sort of reasoning I believe, we can make better sense of creativity as a phenomenon by embracing this continuum of possibility. I also believe that novelty (in some form) and new value are part and parcel of the phenomenon of creativity but its presence is the result of individuals and groups of individuals interacting with their environment ie its an interactional and ecological phenomenon so one might argue these are equally important ideas to embrace in any concept of creativity.

Sources

1 Jackson, N.J. and Lassig, C. (2020) Exploring and Extending the 4C Model of Creativity: Recognising the value of an ed-c contextual domain. Creative Academic Magazine CAM15 https://www.creativeacademic.uk/magazine.html
2 Kaufman, J and Behgetto R (2009) Beyond Big and Little: The Four C Model of Creativity Review of General Psychology Vol. 13, No. 1, 1-12 Available at: https://www.researchgate.net/.../228345133_Beyond_Big_and...
3) Rogers, C. (1954). Toward a Theory of Creativity. ETC: A Review of General Semantics, 11, 249-260.
4) Csikszentmihalyi, M. (1996). Creativity: Flow and the Psychology of Discovery and Invention. New York: Harper Collins.
5) Lassig, C. J. (2012) Perceiving and pursuing novelty : a grounded theory of adolescent creativity. PhD thesis, Queensland University of Technology. Available at: https://eprints.qut.edu.au/50661/

Kevin Byron The term 'product' tends not, in my view, to embrace all forms of creative outcome, and is much more associated with the world of business. For instance performers in dance, music and acting who produce original work, don't describe these as products. Similarly researchers who publish papers that by definition contain a peer-reviewed original idea, don't look at their papers as products. What about authors, and artists too? Again we have a semantic problem with creativity, and I believe it's important to differentiate the terms in creative outcomes as we try to do in 'process' because the term 'Product' in debates on the meaning of creativity is often dismissed as unimportant. The outcomes are just as important as the process in my view because they are living proof of an earlier creative process. The upshot of this is there can be no single,

unambiguous definition of either process or outcome. This is not a unique problem in terms of definition because the same variability applies to other abstract human experiences such as love, beauty and spirituality. It's only in the experience of reason that more clarity can be found - which of course is to be expected! Maybe that also explains why we can't define those other experiences clearly because in so doing we are trying to define with reason, something that lies outside reason!

Norman Jackson I couldn't agree more with your comments on 'product' which is simply a tangible result or manifestation of an individuals' or group of individuals' engagements in acts that produce something that is deemed to be creative. It can be anything - practices, performances, processes. In an ecological sense it is about creating unique environments of affordances, relationships, resources in order to achieve particular outcomes.

I think we can debate whether outcomes are viewed as being as important as process. All too often it is the outcome that is deemed valuable and process is ignored. But to individuals having a go at creating something for themselves the process may be far more important than the outcome. So I agree with you when you say "there can be no single, unambiguous definition of either process or outcome." The problem I have is that all too often concepts or definitions of creativity seem to deny that persons, processes and environments have anything to do with the outcome. Which is why I like Carl Rogers concept which seems to embrace it all "the emergence in action of a novel relational product, growing out of the uniqueness of the individual on the one hand, and the materials, events, people, or circumstances on the other" (1 p. 251)

Source
1) Rogers, C. (1954). Toward a Theory of Creativity. ETC: A Review of General Semantics, 11, 249-260.

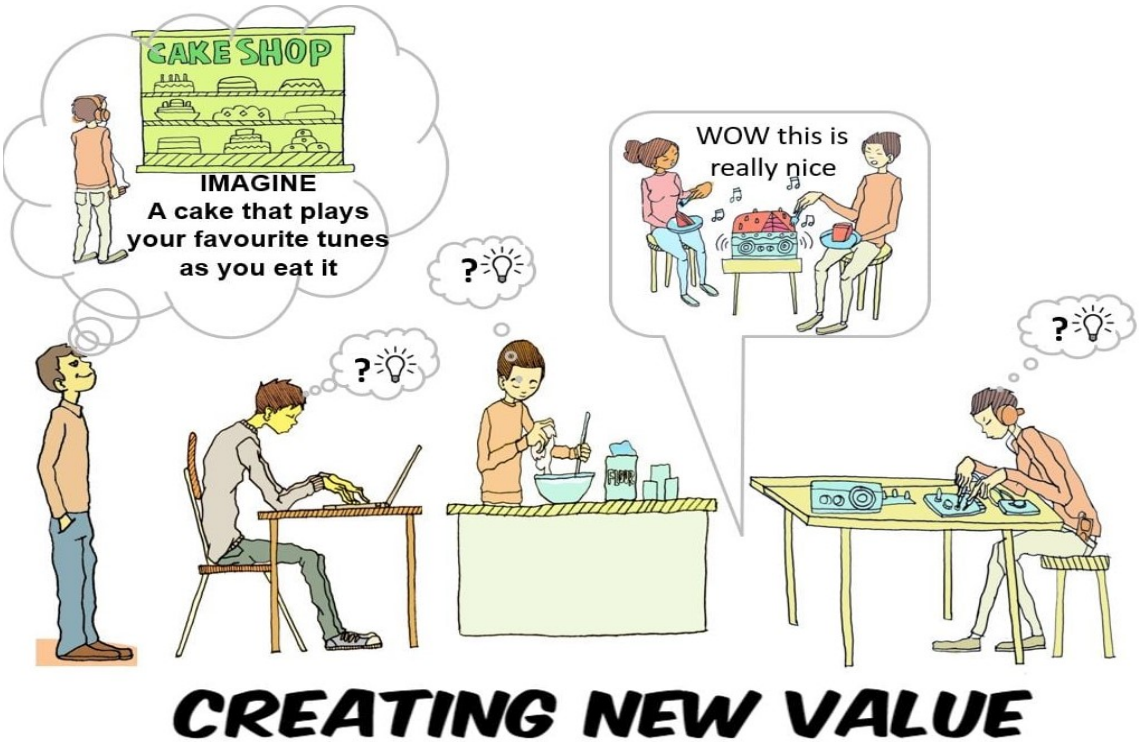
What does value have to do with creativity?

Norman Jackson We have given the idea of novelty/originality a good airing but concepts and definitions of creativity invariably include the concept of value as well. But what does it mean to create new value? Creating new value is about creating new meaning – meaning that can be kept to ourselves or shared with others.

Stephen Stosny (1) suggests the *creation of* value is part of being human. "We have to create it because it doesn't exist in nature. Value is "the human cobweb," To know anything about spiders, you have to understand the one thing that makes them unlike all other insects: They make cobwebs. To know about human beings you have to grasp our ability to make things important to us - above and beyond survival utility - and worthy of appreciation, time, energy, effort, and sacrifice. You must understand our ability and our drive to create value. And, whenever we lose something we value, we feel sad. Whenever we violate or ignore our deepest values, we experience guilt, shame, and anxiety - not as punishment - but as motivation to be true to those values that make us who we are."

But creating value can mean many things and it would be interesting to gain different perspectives from people immersed in different domains, environments and cultures. For example, how is the value that a teacher creates different to the value that a plumber creates? and is there a relationship between the value we create in the context of our work or other aspects of our life and our own values? As a working hypothesis does our own creativity emerge from thinking and actions that are at a fundamental level rooted in our values and is this why, when we achieve in this way it makes us feel good and reinforces who we think we are?

Paul Klieman's post below provides a great illustration of a volunteer inventing a tool that was novel and useful to him and his group of volunteers involved in canal restoration. It is these sorts of stories that bring to life dry characterless definitions and concepts and I am sure that we all have these sorts of stories to tell.



Source
1) Stosny, S. (2009) Creating Value: How important is it to make things important? Psychology Today Available at: https://www.psychologytoday.com/us/blog/anger-in-the-age-entitlement/200904/creating-value

Paul Klieman Now this is a creative solution to a very real problem. The usual official contractors spend a small fortune closing the canal, building a coffer dam and pumping out the water. The local volunteer group came up with a quick and easy solution.

THE STORY Huddersfield Narrow Canal East Huddersfield to Standedge Tunnel.

Well I had an idea 💡

The water on the Rochdale canal from lock 1 to 33 on our teams patch is too deep where the head paddles are to get in the canal and repair them. Its about 12ft deep so when we have problems with the head paddles and rods we would have to use a cofferdam. A cofferdam is scaffolding and sheeting that our contractors come and put in the canal to make a dam so we can then empty the water out in front of the head gates so we can get in and work on repairs. Cofferdams are a massive inconvenience to our boating customers in the summer generally a week long stoppage and a massive expense to CRT. So i thought this might help CRT improve customer service with this problem. I have designed a simple platform so instead of standing on the bottom of the canal when the water is in which you can't do because the water is 12ft deep. I can now stand on a platform that is 5ft ish down from the water level with my dry suit on, I can now do most of the work needed on the paddle and paddle rod. Doing it this way the inconvenience to our boating customers when it is only a paddle bolt or paddle rod is about an hour ones on site. Today was it's first outing, it went really well and we fit a new paddle rod a reconditioned rack and all new bolts. It has taken quite a while to get to this stage. HudFabs made a fantastic job of fabricated the platform from aluminium for lightness and also did a wait test on it and certified certificate for our health and safety. We also had to generate a risk assessment for it with one of our health and safety guys and my bosses. Went really well today just a few more tweaks to our risk assessment and it will be all good. Thanks Boss for supporting me on this project.

Norman Jackson It's a great story that illustrates really well the idea of novelty and value to an individual and his specialised group. Also illustrates the way environment and context are important to the construction of value.

Kevin Byron If we regard newly proposed policies as acts of creativity, their potential value is played out in daily debates in parliament. When it comes to a general election the whole public get involved in what is essentially a battle over the relative value of different policies.

Andrew Penaluna thanks Norman, and of course norms differ between contexts. What is novel here may not be novel elsewhere etc. I am working with a country that has gone to war since my project started, and it has made me refocus on what matters most to the individuals concerned.

Norman Jackson You make a good point Andrew Penaluna We tend to see value as static but value varies with time and with changing circumstances. As parents we try to pass on what we value to our children but we know from our own experience that although family shapes our values we develop our own based on our own experiences.

Norman Jackson Kevin Byron Sadly, a lot of things other than value of policies are at play in an election. We have only to look at the recent USA elections to see this and the Brexit referendum provides another example of the way politicians distort value for their own ends.

We touched on the dynamics of power earlier in the suppression of novel and original ideas in the name of state security. Power also uses value as a weapon when fighting for power. When taken to the extreme in authoritarian regimes social norms as we know them against which value is judged, can be replaced be new sets of ideologically driven norms and values. The cultural revolution in China comes to mind.

Dimensions of Value

Norman Jackson I just came across this passage by John Kekes "The Human Condition"

"There are three dimensions of value: universally human, cultural that vary with societies and times; and personal that vary with individuals. Each dimension has a standard for judging the adequacy of the relevant values. Human values are adequate if they satisfy basic needs; cultural values are adequate if they provide a system of values that sustains the allegiance of the inhabitants of a society; and personal values are adequate if the conceptions of well-being formed out of them enable individuals to live satisfying lives. These values conflict and our well-being requires some way of settling their conflicts, but there is no universal principle for settling the conflicts; it can only be done by attending to the concrete features of particular conflicts. These features vary with circumstances and values. https://oxford.universitypressscholarship.com/.../acprof....

Doug Cole The importance of creativity and the creation of value being something that is determined by the individual could certainly be seen as being important from both an employability and employment perspective. From an employability perspective this could be interpreted in a number of ways, but for example taking the notion of personal identity and more specifically the development of one's professional or career identity, this would fundamentally be determined by the actions and learning an individual engaged with in order to develop value and support their evolving identity. Continuing to change in such a way that would then ultimately support their ability to secure, function in and even flourish in any given employment context.

Then more specifically from an employment perspective this could be viewed through a lens which is concerned with one's actions and how creative we are in any given role itself to then add value to our individual performance and employers in any given context.

I guess all of this would exist across a spectrum and be directly influenced by many other variables where an individual may demonstrate no creativity and add little value to either themselves or their employers to those who obviously do the opposite and everything in between.

Certainly I think it's something that we should value as part of any more holistic approach to employability for the future.

> **Norman Jackson** Thanks for this interesting perspective Doug Cole. It always strikes me that employment settings are quite different from academic setiings in the sense that that they use the language of adding value or creating new value to products and services. This is language that is rarely heard in HE. In what ways are we encouraging students to see what they do in the academic setting as adding value or creating new value?
>
> **Doug Cole** HE and industry have been speaking a different language for a long time and certainly not just in this particular case.
>
> I think this language will probably vary by sector, by employer and by individual? Its not a phrase that was readily used or heard throughout my career before entering HE, the sentiment was always there of course, but not sure it was explicitly described as 'adding or creating value'.
>
> Maybe in certain professions it may be more common? I am not really sure again. For example where that value might be more readily quantified for example in financial terms? Or in more creative subjects where they are actually producing something tangible, apologies I know this is the obvious example!
>
> I think doing a good job, working hard, being committed or passionate about what you do is spoken about more frequently perhaps in industry?
>
> In HE added value and ensuring value for money is frequently discussed by leaders and other colleagues, agreed maybe not so much with students directly but again maybe it depends on the disciplines? Others may have a more informed view here.
>
> **Norman Jackson** Perhaps it’s the language of the managerial world Doug Cole but I seem to have watched and read a lot of stuff from the business world where that sort of language is used.
>
> **Doug Cole** I am sure you are right Norman Jackson it just brings me back to my current thinking and approach where we focus on the principles of unpacking what these terms mean, value, talent and success first. Unless we do this how can we hope to address them effectively in practice or at the very least make them more explicit with the learners themselves so they have better awareness of where to best apply their efforts in the longer term. Some sense of direction is important for me otherwise these terms all remain ambiguous and much harder to engage with. I believe we should be having these discussions with all students if we hope to develop true lifelong and lifewide learners.

What words or expressions do we use to show that we value something?

Cambridge Dictionary: VALUE the importance or worth of something for someone: how useful or important something is, to consider something as important and worth having: the beliefs people have, especially about what is right and wrong and what is most important in life, that control their behaviour.

In judging the value of something we evaluate its significance, importance, usefulness, qualities, worth and perhaps its potential or possibilities. Our evaluations consider value in a context and often in comparison to similar things. When judging value we consider such matters as purpose and usefulness in a practical, ideological or aesthetic sense. Judgements can be both analytical – statements of facts, and emotional – connecting us to the thing ie value can be relational and historical. We use words such as appreciate, cherish, love, treasure, but many other words are used to convey a sense of value.

I value this forum because it enables me to have these sorts of conversations about something I care about with other people who also care about these things. I value it because it enables me to learn, because the people who participate generously share their perspectives, ideas, experiences and resources. I value it because it has a history - a legacy, because it has a present - this unfolding story and because it has potential to enable future conversations. I value it as a place where I can meet the special people who regularly participate and contribute - people from all over the world who otherwise I would not be able to meet. Perhaps it is only when we try to show the reasons why we value something that we begin to articulate the dimensions of the rich concept we call VALUE?

> **Doug Cole** I think that there is so much that we value as individuals that often bits of this may get lost in the haze of the day to day that is life. I think it's important to take a breath sometimes, particularly now and remind ourselves of that broader picture of what value really means to all of us. Taking it all in to give us a little clarity in this complex world we live in!

Jennifer Willis Although the word 'values' was not used, the concept is implicit in a project by Irvine Welsh on the right to offend in art. He has just given an interview on Sky's Kay Burley show if you want to retrieve it, and a documentary is forthcoming. He is arguing that political correctness in a multi-cultural society is impinging on the right of self expression.

Holly Warren Value= something that never looses it with and is passed on in order to evolve and encompass new positive visions.

Paul Kleiman Our street and those surrounding us have been involved in the 'Enchanted Windows' project, livening up the dark nights by decorating our windows. These are just a few of the lovely things people have done.

> **Lina Pugsley** Love this! Thanks for sharing.
>
> **Norman Jackson** Hi Lina Pugsley why do you 'love' it? We are trying to understand why and how we value creativity?
>
> **Chrissi Nerantzi** Beautiful work - the value for me here would be to feel good and also connect? We look through windows but also at windows and discover the beauty in the moment through imaginative displays like these?

How is Value Learnt & Understood by Learners and Conveyed by Teachers?

Norman Jackson: Formal education is an important place for the transfer, sharing and learning of value and values in all disciplinary and cross-disciplinary contexts, and teachers have an important role to play in this process. It would be interesting to consider 'How value is understood by learners in their creative projects and achievements? And how teachers' understanding of value in the context of learners' creative work, is conveyed to them?"

Carly Lassig Of value to whom? I guess it depends on the level of creativity. To be considered Big-C creativity, it needs to be considered valuable by the field. Pro-c contributions need to be considered valuable within the profession. Little-c creativity is considered of value in everyday settings. The value of ed-c contributions I would argue is mostly assessed by those in the educational environment for whom it was intended, e.g., teachers, examiners. Mini-c only needs to be considered creative and valuable by the creator. For all levels though, I think the value perceived by the creator is important as well.

What is considered valuable of course will differ among individuals. In my research with secondary school students, it varied greatly among students, and among tasks and contexts. Sometimes the value was related to the pushing of boundaries, of doing something outside the norm. Other times creative personal expression was of most importance, being able to express their emotions, ideas or personalities. Sometimes the value was in how creativity could assist them in achieving a task. As school students, this was often related to achieving a school task, but it also could relate to achieving a task in other personal or social contexts.

Jennifer Willis This is a really important issue for us as teachers. Do I have a duty to be society's means of reproduction of values? I have always tried to develop free thinking, whilst having to acknowledge that in order to succeed in assessments, some curtailing of personal values may be necessary. I am aware of the hypocrisy of this, and that I am effectively 'giving in' to social control. I think we are even subject to this covert constraint in order to achieve a doctorate - it is only once we are secure, perhaps retired, that some of us feel able to be truly honest about our values.

On the issue of task achievement, let me give a current example: last week, a 9 year old pupil handed me a beautifully word processed 6-page document which was a story she had written of her own volition. She gave it to me with a mixture of pride in her achievement and modesty about errors in it. Why did she spend so long writing this story? (It was a stream of consciousness account, blow by blow, of her family going on holiday and returning, with a separate thread telling how her best friend was changing school and leaving her.) It was not a task she had been set. She is not someone who approaches homework with enthusiasm, yet she had felt a need to write this lengthy account. My own interpretation is that this was her seeking an outlet for her creativity, and that creativity is an essential part of her personality. Alternatively, did she want to impress me? Was she seeking my approval? I wonder what you make of this story?

> **Norman Jackson** I guess there could be a multiplicity of reasons including wanting to 'impress you' but I suspect for anyone to devote the time and effort to writing something as profoundly personal came from an inner spirit driven by her need for self-expression perhaps to work through her own feelings and imagine the consequences of the events that were unfolding in her life.
>
> **Norman Jackson** You make an important point about conflicts between personal values and what you are allowed to value having to conform to the rules of institution, or perhaps a national curriculum. We can only value something in the way we feel it should be valued if we have the freedom to do so.

Chrissi Nerantzi thanks for inviting us all to think about the value of creativity and my mind started wondering in different directions... The question you posted "How is value understood by learners in their creative projects and achievements? And how are teachers' understandings of value in the context of learners' creative work, conveyed to them?" made me think about assessment, assessment criteria and feedback. I suspect Paul Klieman will have something interesting to contribute and I am looking forward to his thoughts.

I recently completed an MA in Creative Writing and I have been working on my final project since the beginning of the year. Initially I didn't have a clear idea what I was going to do, what my project would be about and I couldn't connect with my ideas. But then and through conversations with my supervisor, I identified something that I could connect to in a very special way. Something that I felt would be of value to be. Is this a bad thing? Does creativity and its value also go back to the originator? The maker? I love working with others, most of my work is actually collaborative and here I am suggesting something that would be of value for myself? I decided to focus my project on autobiographical stories. Progressively and with the help and encouragement of my supervisor, I became more and more experimental and the final project is called "The dress that speaks". As it says, it is a dress that captures the "Up to the clouds" story I have written. It is a collage of stories, memories and fantasy that all come together on the dress. As the seeds of the stories are in my parents past, I felt deeply connected with them during the process of making and the true value for me was that opportunity to make sense of their past and how their life stories connect with mine. At times, I felt deeply upset and emotional but working through it was enriching. My watery eyes helped me to open pathways into their souls and create something that can also be shared more widely. As I was working on the project, I have documented it in detail and shared the story itself multiple times with friends. While the original value of being engaged in this process came back to me, through creating the product and documenting the process, I can share it with others and hopefully that will be of value to others too, in different ways.

My supervisors words and feedback were encouraging from the outset. He stretched me, he challenged me and I trusted him. He also saw value in my work. His ongoing support and feedback evidence this and boosted my self-belief that there is something of value in my work. I will need to think about this all a bit more also to make a connection perhaps between feedback and value? Looking forward to everybody else's contributions.... apologies for the bold... don't know what happened.

Norman Jackson Thanks Chrissi I know that you are very busy so thank you for finding the time to share your story which I think illuminates so well the sort of interactve relationship that a teacher might have with a learner through which 1) the teacher is able to convey something of what they value to the learner through their encouragement and feedback and 2) the learner, through their efforts and the products of their work, is able to communicate back to the teacher. In this way, it seemes to me, that both sets of values are being shared and in the process both teacher and learner are expanding their understandings of the meaning of value in this particular context. I love it.

> **Paul Klieman** One small obvious thought does occur: both creativity and value are fluid, shape-shifting concepts. Both are constructed within the transactional relationship between the student and the tutor, and the ideas, processes that flow between them. To which you have to add institutional, disciplinary and assessment context (domain) which definitely complicates and possibly constrains the creative possibilities and the value.
>
> **Norman Jackson** I am reminded of John Cowan's insightful chapter 'How shall I assess creativity? in Developing Creativity in HE. He elaborated a pedagogy of ‘guided participation’ in which learners made and justified claims for their creativity in a manner in which the teacher could understand and interact with their reasoning. The teacher’s role was not tell students what creativity meant but to help them explain their understandings.
>
> I have posted the book chapter on the Creative Academic resources page https://www.creativeacademic.uk/resources.html

Chris Wilson The elephant in the tall grass

Thanks for the excellent question - How is value understood by learners in their creative projects and achievements? And how is teachers’ understanding of value in the context of learners’ creative work, conveyed to them?" I'm sorry this is only going to be a relatively short initial response. I'll attempt to unpack more fully.

I've always loved Gary Larson's cartoons. There's something about his ability to make the familiar absurd, and the absurd familiar, that really appeals to me. His 1983 cartoon of a man, flat on his face having either missed or not observed warnings of an elephant in the long grass, itself a wonderfully daft conceit, so beautifully punctuated with the evident reason for the warning. There's just something about this cartoon that resonates for me with this topic.

There is of course an implicit association with assessment in questions of achievement and creativity. The fatigued and weary HE cynic in me is consequently tempted to say 'it isn't, generally', 'who knows?', and 'poorly, in most cases'. After all, if you wanted to find somewhere in university study where value was more contentious, or creativity more absent, assessment practice is always a good place to start looking. Students routinely rate assessment below nearly all other areas in terms of 'satisfaction' and I can name the handful of academic colleagues I've met during my entire career who have always 'loved marking', and have lost track of the number for whom assessment workload was unmanageable or simply unpleasant. Let's be honest, novelty in assessment design and high levels of student satisfaction are both rare, and rarely coincident, and richness of attention, dialogue, and reflection never been subject to greater challenge in terms of capacity. I for one have never had less time to devote to reviewing assessment, or my time for such activity been more fragmented, and I'm always met by bewilderment in curriculum development workshops with teachers when I ask, 'Will you enjoy the assessment you've designed?', implying this was either overlooked or considered counter to the spirit of assessment in some strange way.

In terms of how value is understood by learners, of course the ambition in assessment is for this to be 'in the moment' as far as possible but also with sustainable positive impact over time. After all, if a learner isn't aware of what they've achieved, how they've changed, and what they've changed by the time work is completed and assignments submitted, it is arguable that something has at least not been fully developed or realised in learning, at least in terms of metacognition. Nevertheless, in terms of feedback from teachers, this normally being mandated within tightly defined timescales in order to be 'timely' for NSS and other student evaluation purposes, any uncertainty is usually designed to be closed down quickly and in defined ways. The concern, of course, is the extent to which an increasingly transactional and 'grade fixated' perspective by learners can drive surface level reflection. After all, by the time students have completed their assessed creative endeavours, the learning outcomes have either been met or they haven't. The 'learning' has finished, hasn't it? Whilst there are of course numerous examples of assessment design that incorporate elements of student reflection, and indeed elements of wider programme design that embed reflection between and across modules more actively in professional skills or personal development activities, the truth is that for a significant proportion of learners in HE, we simply don't know what they do with feedback or how they feel about what they have created. What for many is an extremely emotional experience, remains a private, dis-aggregated, and a mark simply recorded against a standardised scale related to knowledge or competencies. Perhaps more worryingly, the experience remains frequently dispassionate and unemotional for everybody involved - both students and teachers.

Nevertheless, I have had the opportunity to have engaged in rich dialogue with students about their creative work, and, thanks to the wonders of social media, in some cases over long periods of time. As well as the occasional challenging conversation with individual students about the reasons for 'failure', perhaps more interesting are the occasions where students are surprised by their success. I have on many occasions been directly involved in determining marks for assessment at all levels of UG study where students involved are not simply thrilled by their results, but also stunned by their success. Challenging wider conceptions of capability and possibility, the experience of exceeding expectations can have lasting and profound effects.

Gillian Hill The combination of a Larson cartoon & elephant - right up my street! Accompanied by a great and thoughtful piece about creativity & assessment. ▫

Josefina Ramirez What a lovely and clear image of how often education turns out to be a secret trap to have them sort out obstacles ; instead of being the process they should learn about, and be closely involved in.

If by including creativity in one of the aspects to be achieved in a task (which I think it should always be), we have them involved in how to assess and consider it, they would first “depersonalize “ the process by defining how anyone could demonstrate creativity. It is easier then to recognize and even self evaluate and receive feedback from others , regarding that task. It is the equivalent of “place the elephant” with the students, becoming a challenge and not a trap.

DIMENSIONS OF VALUE

Norman Jackson In **“**The Human Condition" John Kekes suggests value can be mapped in three dimensions

"There are three dimensions of value: universally human, cultural that vary with societies and times; and personal that vary with individuals. Each dimension has a standard for judging the adequacy of the relevant values. Human values are adequate if they satisfy basic needs; cultural values are adequate if they provide a system of values that sustains the allegiance of the inhabitants of a society; and personal values are adequate if the conceptions of well-being formed out of them enable individuals to live satisfying lives. These values conflict and our well-being requires some way of settling their conflicts, but there is no universal principle for settling the conflicts; it can only be done by attending to the concrete features of particular conflicts. These features vary with circumstances and values.”

https://oxford.universitypressscholarship.com/.../acprof....

Norman Jackson Philosopher Robert Hartman argued that the value of anything is determined by the extent to which it meets the intention of its meaning. For example, a chair that all of the natural properties contained within the definition of chair, is by definition a "good chair". A chair that has only a few of the natural properties

contained within the definition of a chair is by definition a "less than good" or "not as good" chair, a fair chair, a poor chair, etc. A "good chair", according to Hartman, fulfills the intention of its definition.

Hartman discovered that every concept has three dimensions – three types of value: (1) The value of its uniqueness, (2) The value of its function or role, and (3) The value of its meaning and purpose. These three "Dimensions of Value" are referred to as: (1) Intrinsic Value Dimension, (2) Extrinsic Value Dimension, (3) Systemic Value Dimension.

1 The intrinsic dimension values an object or person with an eye toward its singularity, essence, uniqueness, or spiritual being. When describing or valuing persons or objects in this dimension, one becomes personally involved with the object/person. There is a self-giving to the object/person which is not present in valuing extrinsically or systemically.

2 The extrinsic value is the dimension of comparisons, relative and practical thinking. It includes the elements of the real, material world, comparisons of good/better/best, and seeing things as they compare with other things in their class. This is the dimension of seeing things and their properties as they apply in different contexts.

3 The systemic dimension is the one of definitions or ideals, goals, structured thinking, policies, procedures, rules, laws, oughts and shoulds. It is one of perfection. If a person values something or someone systemically, then that something or person has to fulfill the idea perfectly. In other words a mental idea of how something of someone should be has either been obeyed or not.

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MAPPING WHO VALUES CREATIVITY?

Norman Jackson: This has been an interesting discussion and the concept of who is the valuer where creativity is concerned, has been the dominant theme. What has emerged is a general agreement that creators themselves are first and foremost their own judges of value and are presumably motivated to engage in creative thinking and practices by the possibility and potential of creating something of value to themselves or others. But we live in a social-cultural economic world and other people have views on whether a practice, performance or product has value and it's their views that count as to whether something has value in a social-cultural or commercial sense. In the latter part of the discussion we saw that value was multidimensional and it is therefore not surprising that we value 'things' differently according to the weight we accord the different dimensions. For me, the really interesting aspect of this is how we learn to value what we value through a lifetime of exposure to the norms of our culture, noting that it is only by pursuing things which lie outside the norms that we can creatively achieve. I find this a fascinating part of the conundrum of creativity and perhaps what we value and our judgement of it in what we do is an part of our unique creativity.

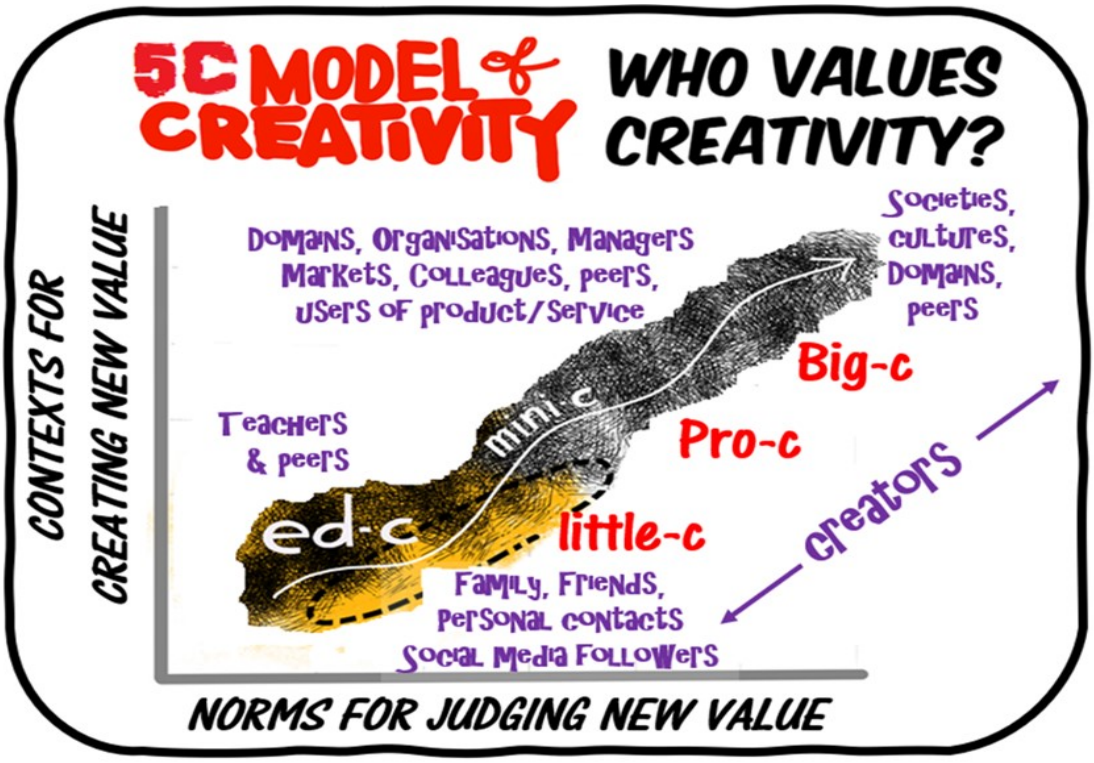
As Carly mentioned in an earlier post we can use the 5C framework (1) we developed from the 4C framework (2) to map the contexts for creating new value and the location of norms for judging the value of creative achievements. By this I mean a tangible expression or manifestation of someone's creativity (thinking and actions) in the formation of something new (practice, performance or product). To keep it simple the following narrative focuses only on individuals rather than collaborations or group enterprises.

In all domains of the 5C framework creators are engaged in thinking and practices that have the potential to create novelty and new value. As Carl Rogers' humanistic perspective on creativity tells us (3), first and foremost it is the creators themselves who value their creative achievement. Only they can understand why and how the phenomenon emerged in the circumstances of their life and only they can experience the formation of a creative achievement. The value they ascribe to an achievement might be very different to the value that others ascribe.

In the little-c domain individuals pursue novelty and create new value in the circumstances of their everyday life. Their creative achievements might only be known and valued by themselves or by the people who their achievements directly affect – for example a mum preparing a novel meal (not the norm) for her family. But such achievements might be broadcast more widely and appreciated by others – people who use Instagram, Twitter or Facebook for example have friends/followers who might be interested in their creative achievement. In such an environment some of these little-c achievements have the potential to 'go viral' to become part of popular culture, even if its only for a short period of time. It can be argued that the advent of social media enables more people to be exposed to individuals' little-c creative achievements, and therefore implicated in their valuation, than at any time in our history.

In the educational domain (ed-c) judgements on the value of an individual's achievement are usually made by a teacher against a set of pre-determined criteria but may also include external examiners if performance is in the context of an examination. As Carly indicates in her post based on her own research (4) – how a learner values their creative achievement may be different to what a teacher values. Teachers have an important role to play

Figure 1 5C framework (2)



in sharing their judgements of value through verbal or written feedback during the production of an achievement – whether a performance or artefact. Much of this feedback is informal and spontaneous as a teacher interacts with her students, but some of the feedback might be more formal and deliberative as a teacher formally evaluates and judges a piece of work and provides written feedback. Chrissi's post on her interactions with her tutor on a creative writing course, show values can be shared, communicated and progressively understood through this interactive relationship. Peers also may be exposed to an individual's achievement and their teacher's comments and they also form opinions on value. In fact, this context for being exposed to the achievements of others is the way in which we come to understand the norms of our environment and it prepares us for learning what this means in the domains in which we will work.

As we move into domains of expertise, more people are involved in decisions as to whether a creative achievement is of value. Every context is different, if we imagine the development of a new innovative product it might include peers in a design team, managers, sales reps, managers of retail outlets and the buyers and users of the product – the customers. In an entrepreneurial environment like a start-up the valuation of a new product or service it might also involve investors. In the commercial world factors other than creativity come into play in the valuation of a novel product. In the academic world where the development of new knowledge and ideas is the product of creative achievement – it is experts in the discipline who act as peer reviewers, journal editors or who sit in the committees of grant awarding bodies who judge value. If we imagine someone in the performing arts field it might include other performers, a performance director and production teams, audiences and professional critics. Of course, amongst this diverse group of actors some voices will be more influential than others in determining value and persuading others with their opinions.

The Big-C level is an extraordinary achievement in any field in which the value of what is created is widely acknowledged. The valuing of such achievements is usually led by experts in the field and promoted through awards, media and education. One of the features of Big-C creative achievements is their enduring character. They are often the foundational building blocks for culture in a domain and so are valued in a historical sense for advancing some aspect of the domain.

Perhaps one of the most interesting perspectives to emerge from the discussion related to where access to new ideas or products are restricted for commercial, political or other reasons, so that value can only be appreciated by those with the power to control the flow of information.

Thank you to everyone who has contributed to this discussion.

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Jennifer Willis Thank you for a very useful summary Norman Jackson and your revised framework.

One thing that fascinates me is how, although apparently brought up in the same value environment, siblings have different values. Let me give an example: I am the eldest of 3 children, and share many creative values with my parents; my brother, the middle child, has quite different values in this domain, but shares many broader values with our parents; my sister, the youngest, has very different values in all domains. Now, is this due to age? The environment is, of course, dynamic, and in our case even more so as we moved home frequently due to my father's work. Consequently, each of us experienced some shared, some unique experiences at formative times of our lives.

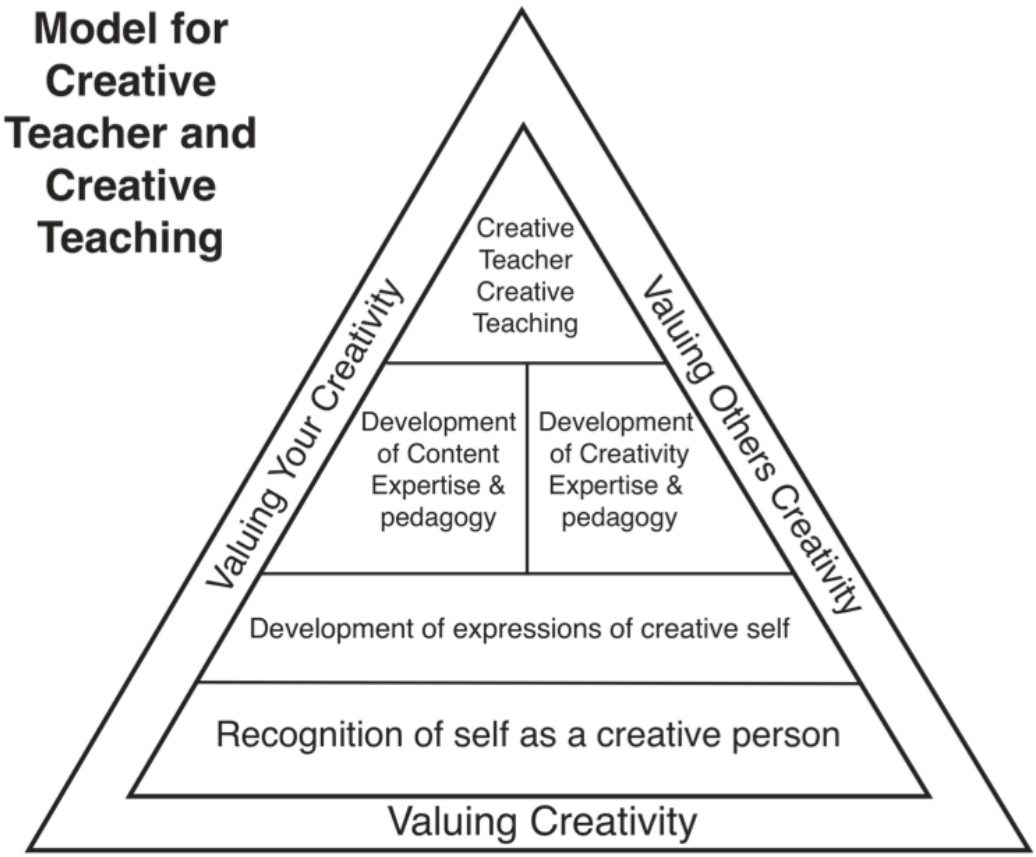
I see a similar pattern in my husband's family, so I suspect this may be a common phenomenon. I have also thought it might be down to education - my sister didn't go to university and has a socially different group from my brother and me. In my husband's case, education does seem to be a more significant differentiator, over-riding age differences. He and an older sibling share the same profession, respect Hindu values but don't observe daily religious rituals, whereas his other two siblings, who did not have a university education, and despite being in different countries (Sri Lanka and Australia) both adhere strongly to their cultural values (which influence the form of art they have around them).

It's clearly more complex than simply age and education, but I wonder if other share this experience?

Norman Jackson And so it goes on Jennifer Willis the development of values is clearly a very personal thing reflecting an individual's life experiences, circumstances and influences. Perhaps this can be the subject for another conversation?

Kellers-Mather's Value-based Creativity Model for Teaching and Learning

Before talking about models it is important to talk about the person, the teacher. First we need to bring awareness to the fact that teaching already uses creativity as the teacher designs lessons, designs learning experiences, problem solves all the time in the classroom develops homework and so on. You may have not seen it this way, but yes! you are utilizing creativity already! Now you might be wondering how to utilize more creativity in the class room how to consciously develop as a creative teacher . Below is a model developed by Dr. Kellers-Mather showing a path to develop your creative confidence and become a creative teacher and learner. It starts by you valuing creativity, valuing in you, valuing in others; then getting to know who you are a creative person and how are you creative and then start expressing it in your every day life which is the base for becoming a creative teacher and learner. After the base is covered, you can actually move to build the expertise in creativity and bring it together with you expertise in the current subject to bring creative action into the class room.



Source https://crearla.weebly.com/teaching-and-learning-models.html

Creative Academic Team

Top — Dr Chrissi Nerantzi (Co-Founder & Director), Kieran Matthews, Johanna Payton

Bottom— Professor Norman Jackson (Founder and Director), Dr Kevin Byron, Professor Paul Klieman,

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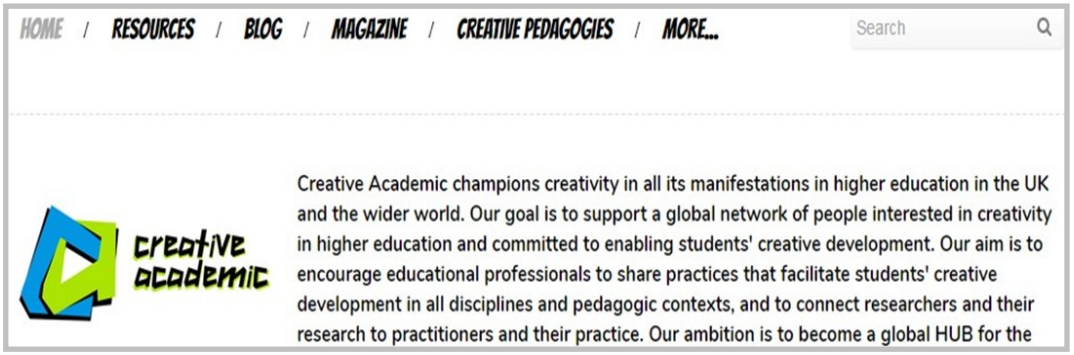

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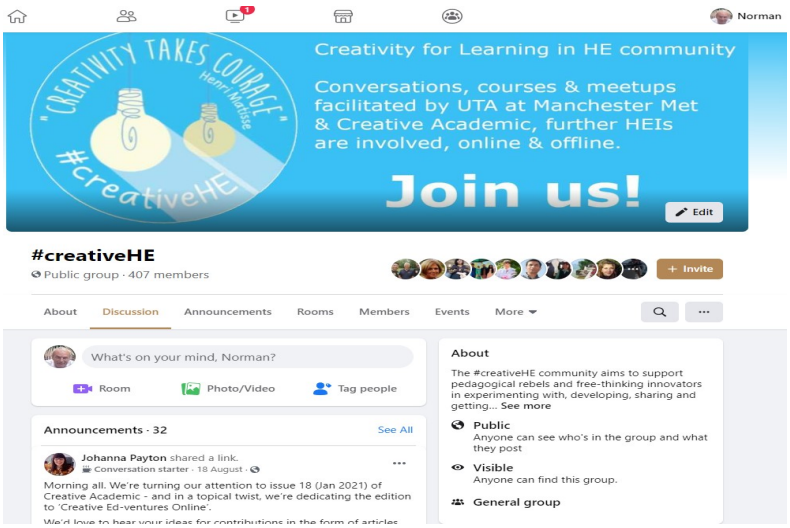

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