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Creativity in Business

Guest Editor
Fredricka K. Reisman, PhD

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Creativity in Business
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Creativity in Business

KIE Conference Books

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PREFACE

I'm not particularly interested in the growth of productivity, except as a measure of the rate of innovation. My fundamental interest lies rather in what's happening to the experience of work and opportunities to exercise creativity.—Edmund Phelps, Nobel Prize-winner on the importance of creativity and innovation (FT, 14th June 2014)

APPLICATION OF CREATIVITY IN BUSINESS

The International Conference on Knowledge, Innovation and Enterprise is delighted to publish this book as part of the 2014 KIE Conference book series. We are equally delighted to have a wide range of subject experts and practitioners to contribute to the book, led of course by Dr Fredricka K. Reisman, President of the American Creativity Association and Director of the Drexel Torrance Center for Creativity and Innovation at the Drexel University, PA, USA.

Although studies on creativity predate Joy Paul Guildford's parting address as president of the American Psychology Association in 1950, many subject experts agree that it was Guildford's keynote speech that literally lit up the bonfire of contemporary studies on creativity.

So, no matter how we conceptualise creativity—be it as a product (Pfeiffer, 1989), as a process (Wallas, 1926), as a personality (Wason, 1968), as a condition of environment (Cheyette, 1977) or as a linchpin of technology (Mishra and Henriksen, 2013), creativity is evergreen, applicable in a variety of contexts, to a variety of situations, familiar or unfamiliar situations. We can attribute the latter development to the nature of the subject: creativity is not a single variable, but a complex multifaceted and multidimensional process. As Guilford (1970) and Feildman (1999) demonstrate, creativity is also a construct that might not be easily straitjacketed in its definition and application.

And nowhere is the application of creativity is more pronounced than in business. We know that creativity is an important ingredient in the 'solution mix' for business growth and competitiveness, but many business leaders won't admit or recognise the critical role that creativity plays in that mix, but would rather talk-up innovation instead.

At the KIE Conference, while we recognise that innovation is absolutely critical to enterprise success, we also believe that there is a strong relationship between creativity and innovation—so strong that we think that relationship is made and seal heaven!

Not to put too fine a point on it, creativity and innovation are tied, umbilically tied. Novelty is central to creativity as it does to innovation. Creativity is about generating novel ideas and innovation concerns harnessing those ideas. This 'idea' does not have to be new to make it creative or innovative. It is possible that we just want to transform an old or existing idea/concept into an up-to-date concept. It is also possible that we simply want to improve an existing idea or concept or, as Osborne (1984), Deroche (1968) and (Cox, 2005) explain, just to effect an improvement to an existing discovery or a rediscovery of an existing product or simply 'seeing' new opportunities. Viewed in this context, therefore, creativity can be conceptualised as both a feedstock and by-product for innovation (see Ogunleye and Tankeh, 2006; Tankeh and Ogunleye, 2007). There is more. Creativity, like innovation, involves a process.

In 1926, Graham Wallas, a British social psychologist, outlines four stages involved in the creative process—preparation, incubation, illumination, and verification. And more recently, another British outfit, Centre for Process Innovation[1], outlines five stages involved in the innovation process—identifying the goals or problems to be solved, analysis, development and design, conversion, and commercialisation. Although, creating or generating new ideas does not necessarily have to precede the innovation process, what is absolutely clear is that once a business has identified the goals or problems to be solved, and analysed what the issues are, the creative process kicks in there from. And we can only imagine the criticality of that creative process to the subsequent stages involved in the innovation process—such as idea finding, idea-recognition and the application of kno-

1. http://www.uk-cpi.com/

wledge (Reese *et el*, 1976), problem solving (Mayer, 1989) and even thinking in 'new' creativity 'boxes' (Brabandere and Iny, 2013). We also need not go far to read from chapter one in this book Dr Reisman's tips on how businesses might apply creativity to boost innovation—something that should enable business to raise efficiency and productivity, sustain competitiveness and growth. Besides Dr Reisman's contribution, every chapter in this book adds to our understanding of the application of creativity in business.

So, on behalf of the KIE international advisory board, I say thank you to Dr Reiseman and to all authors and co-authors that have made this book a reality.

James Ogunleye, PhD, FRSA
Chairman, 2014 KIE Conference

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1 FREDRICKA REISMAN

OVERVIEW AND APPLICATION OF CREATIVITY TO ENHANCE INNOVATION IN BUSINESS AND EDUCATION

ABSTRACT In addition to providing the editor's overview of this book by chapter content, this paper highlights the disconnect between the importance of creativity both in education and industrial settings and the need for better creativity involvement. This paper also presents specific strategies for becoming aware of and enhancing personal and corporate creativity and for applying creativity to the business landscape.

Chapter Overviews

Staich, in chapter 2, starts with historical examples of creativity development in cultures and continues to include the role of creativity in major industries today. In chapter 3, Grossman presents a new creative problem solving system that builds upon the work of Charles Darwin's three step Extinction, Mutation, and Selection model. Many examples serve to clarify complex ideas as the reader is guided along implementation of this creative system. Next (chapter 4) Ambrose explains the influence of four worldviews (mechanistic, organicist, contextualist, and formist) on establishing creative collaborative worksite environments. The use of metaphors is the framework for unpacking the definitions and examples of applications of the four worldviews to enhancing creative leadership.

Kuan Chen Tsai in chapter 5 presents a scholarly meta analysis of research articles addressing the relation between entrepreneurship and creativity. His results calls for more investigations focusing on causal relationships between these two disciplines. Dennett (chapter 6) describes an empirical validation of incorporating the Socratic questioning process as an approach for corporate creative problem solving. He graphically summarizes the literature relating to his findings. Walton's (chapter 7) analyses of the tensions inherent in individual versus group creativity is set in the context of a comprehensive history of creativity related research. Walker and Batey (chapter 8) summarize the research on multilevel research and include a summary table comprised of Author, Model Name, Main Focus, Key Definitions, Individual Level Constructs, Team Level Constructs, Organizational Level Constructs and Main Criticisms.

In chapter 9, Halliday and Fraser present an in depth discussion of indirect communication and its role in the work place and audiences in general. Comparison is made with direct communication and examples of when each approach is effective. The Coste team (chapter 10) focuses on organizational creativity and provides specific strategies and examples including the importance and challenges of diversity. Brown and Wilson (chapter 11) present a collaborative focus on integrating creativity into a music curriculum in the con-

text of technology and employ graphics to explain their concepts. Penagos-Corzo (chapter 12) presents an argument for defining creativity, as an attitude comprised of the following components: cognitive, affective and behavioral. Halliday (chapter 13) presents the emergence of the eBook and provides historical examples of successes and failures due to lack of meshing the new endeavors with familiar situations for the user. Wilson and Brown, in chapter 14, discuss a new concept of project management applied to the arts and point out the tension between interpreting a business versus an art context for a maturing project management theory. Graphics provide clarity and in depth meaning to their words. In chapter 15, Frick,Tardini, and Cantoni present two specific applications of the LEGOR SERIOUS PLAYR (LSP) methodology that were developed to enhance innovation within companies. In the final chapter, van der Duin and Shulmeister present an analytic case study of the creative industry situation in Amsterdam and offer policy suggestions regarding the definition, initiation and development of cross-innovations.

Application of Creativity to Enhance Innovation in Business and Education

Many companies are actively seeking new innovations in order to have a strong competitive position required for long-term survival and growth. Numerous articles are published in magazines, newspapers and journals about important innovations. But these publications communicate relatively little about the vital role of creative thinking and the proven creative activities that are pertinent to successful innovations. In education, many colleges and universities preparing teachers and school administrators pay little attention to the field of creativity. Not only do teachers squelch youngsters' creativity, tragically, teachers often do not recognize either their students' or their own creative strengths (Torrance, 1975). In fact, research has uncovered that teachers often inhibit rather than enhance and nurture students' creativity. The same holds true for many supervisors in industry (Adubato, 2006; Bielaszka-DuVernay, 2007).

According to a 2010 IBM survey of more than 1,500 Chief Executive Officers from 60 countries and 33 industries worldwide, chief executives believe that—more than rigor, management, integrity or even vision—successfully navigating an increasing complex world will require *creativity*. If companies are to build a creative workforce, then K -12 schools [especially middle and high schools] and institutions of higher education need to start producing creative and innovative thinkers. All business innovations have a key component in common—creativity

As we move along the Information Age, and competition became a worldwide phenomenon, new forms of leadership are beginning to emerge and take hold. Spurred on by a challenging economic environment, and international competition, companies are seeking new paths to growth. Workers are seeking more autonomy and engagement in their daily work. Collaborative creative leadership is the future of business. It addresses concerns both at the corporate and individual level and offers solutions that can result in increased business opportunities, personal and professional satisfaction for employees and innovation leading to growth for the corporate bottom-line.

Perhaps we are entering the Creative Age where people become numb to hearing about new technologies and information, and entrepreneurs are forced to use the information in new ways to catch the interest of people. People want actual hands on, new, innovative technologies, for example, a phone that has a hologram instead of just more megapixels.

1. https://answers.yahoo.com/question/index?qid=20110128104545AAUuKl.

The Creative Age will be all about not following the norm, and instead of improving current technologies, it will be making new, unheard of technologies[1]. Entrepreneurship and innovation management will require a focus on collaborative creative leadership. In particular, it is crucial to highlight the vital role of creative leaders in fueling new bottom-line innovations. Creativity will be the stimulus to enhance both educational and corporate entrepreneurship.

What is collaborative creative leadership? A helpful comparison of traditional versus collaborative leaders that addresses eight key indicators is shown in Table 1 (CoLead, 2012).

Thus, "collaborative leadership is a philosophy of leadership where the leader becomes a facilitator instead of an authority figure and allows the team or a group of people to collectively discuss problems, make decisions and innovate solutions"[2]. A collaborative environment is creative, innovative and beneficial to any organization. Change can be difficult, but putting some collaborative techniques in place, is a smart business decision that pays dividends for the long hall. Does your company have a plan? Collaborative creative leaders engage in the following:

- Assess and develop their own creative strengths
- Effectively identify problematic situations within a variety of settings and fields
- Engage in creative problem solving to produce plausible and creative solutions to solve real-world dilemmas
- Analyze and implement the best possible solution to challenging situations
- Improve workplace results through innovative practices
- Examine and interpret contemporary research in creativity and innovation in both academic and corporate settings
- Participate in collaborative, creativity research, and
- Develop in-house expertise in their own workplace to foster creative environments and collaborate with fellow creative problem-solvers within their workforce

Tools and Techniques for Enhancing Creativity[3]

Following are 27 creativity enhancing strategies that may be engaged in by groups or individually (Reisman & Hartz, 2011:361-363, Reisman, forthcoming 2014, Tanner & Reisman, forthcoming 2014). Many of the activities are appropriate both for teachers to use with their students (kindergarten through university level) and for supervisors to incorporate into their training and professional development activities.

1. Torrance, building upon Guilford's work, suggested the following activities:

Unusual uses. Participants are asked to generate unusual uses of an object such as a brick, tin can, or book. Company-related objects such as a pharmaceutical product, an engineering technology artifact, a blue print, and so on may be used;
Impossibilities. Participants are asked to list as many impossibilities or improbable situations as they can.
Consequences. Participants are asked to predict possible outcomes of a situation, for example, forecasting financial options for a company, considering possible results of modifying job descriptions, or determining many solutions to a situation (e.g., avoid negative impact

2. http://www.collaborativelead.com/.
3. Due to space limitations, selected references are provided to delve more deeply into some of the tools and techniques presented.

on a community if a plant is in financial trouble).
Improvement. Participants are given a list of common objects and are asked to suggest as

Characteristic	Traditional	Creative Collaborative
1. Power	Traditional leaders in the corporate world believe that their power derives from their position of authority.	Collaborative leaders encourage equal participation across all levels and take a team approach to problem solving.
2. Information	Information is power. Releasing information on a "need to know" basis allows traditional leaders to maintain authority and control.	Open information sharing is the cornerstone of collaborative leadership.
3. Idea Generation	Decisions generally come from the executives at the top..	Leaders are open to suggestions and ideas from their team and recognize that different perspectives can bring unique insights.
4. Problem Solving	Decisions are made in the boardroom or the executive suite, approved and passed on.	Collaborative leaders recognize the power of a group approach to problem solving.
5. Resource Allocation	Resources are provided only when deemed necessary by the boss.	A collaborative environment is based on trust and resources may be delivered proactively. Team leaders provide resources and allocate time, quickly. This allows projects to develop more rapidly, as employees have access to the corporate resources (time, money, materials) necessary to do their jobs efficiently.
6. Rules and Responsibilities	Managers and team leaders adhere to specific roles and responsibilities for both them and their teams thus, stifling the creative process.	Teams are encouraged to work together. Information, resources, knowledge, time and effort are shared.
7. Resolving Issues	Issues are often dealt with on an individual basis with no regard to the root cause of the problem.	Collaborative leaders focus on trust and look for the root cause of conflict as it arises. They address solutions promptly to keep work moving forward.
8. Performance and Feedback	Most traditional corporations practice a semi-annual or annual review process based on corporate policy. This can be detrimental to employee morale. If an employee has had a banner year, but in the last month missed a deadline or a project they were managing ran over budget, it can result in a negative performance review.	The nature of a collaborative environment means that leaders and team members are equally valued and work closely together on a daily basis, providing opportunity for immediate feedback, praise and constructive criticism.

Table 1: Comparison of Traditional Versus Collaborative Leaders

ways as they can to improve each object without regard to whether or not their suggestions are possible.

2. SCAMPER

The acronym, SCAMPER, refers to the skills of Substitute, Combine, Adapt, Modify, Put to another use, Eliminate or "minimize," and Rearrange or reverse. This technique involves a list of verbs that you relate to a problem resulting in creative solutions and stems from Alex Osborn's brainstorming process (Osborn, 1964) and later arranged by Bob Eberle as a mnemonic to increase interest in one's perceptive, imaginative, and creative abilities (Eberle, 1983, 1997). It involves looking at situations from new perspectives. Osborn's ground rules for group brainstorming comprise the following: judicial judgment is ruled out; wildness is welcomed; quantity is wanted; and combination and improvement are sought. These four guidelines provide the power that underlies divergent thinking.

3. Six Thinking Hats is used to encourage and generate different types of thinking, to alleviate individuals feeling inhibited, and to explore ideas when selecting which to take forward (See DeBono 1999). Table 2 shows how the activity works. Each activity is designed to provoke different types of thinking in individuals and groups.

Hat	Function	Example
White	Information	Asking for information from others
Black	Judgment	Playing devil's advocate. Explaining why something won't work.
Green	Creativity	Offering possibilities, ideas
Red	Intuition	Explaining hunches, feelings, gut senses
Yellow	Optimism	Being positive, enthusiastic, supportive
Blue	Thinking	Using rationalism, logic, intellect

Table 2: DeBono's Six Thinking Hats

4. CATWOE is an acronym for:

- *Customers* (Who is on the receiving end? What problem do they have now? How will they react to what you are proposing?)
- *Actors* (Who are the actors who will carry out your solution? What is the impact on them? How might they react?)

- *Transformation process* (What is the process for transforming inputs into outputs?)
- *World view* (What is the bigger picture into which the situation fits? What is the real problem you are working on? What is the wider impact of any solution?)
- *Owner* (Who is the real owner or owners of the process or situation you are changing? Can they help you or stop you? What would cause them to get in your way? What would lead them to help you?)
- *Environmental constraints* (What are the broader constraints that act on the situation and your ideas? What are the ethical limits, the laws, financial constraints, limited resources? regulations, and so on? How might these constrain your solution? How can you get around them?)

5. *NUF Test* is helpful when you want to identify what to work on: being more creative, developing an idea, or getting something that you will be able to implement. The acronym stands for *New* (not been tried before), *Useful* (solves the problem), and *Feasible* (can be implemented in practice). Solutions to the following problem may be scored from 0 to 10 on these three characteristics:

- *An idea for keeping a door open.* One solution, which is scored below, may be to use a magnet attached to the wall and to the door. Each solution generated could be scored and the one with the highest score be given serious consideration.

Criteria	Rating	Assessment
New	2	Similar ideas have been used before.
Useful	7	Should work.
Feasible	3	Expensive to install on grand scale.
Total	12	

6. *Mindtools*™ provides a tool kit addressing the following skills that a supervisor or manager can use: leadership tools, team tools, strategy tools, problem-solving techniques, decision-making tools, project planning skills, time management techniques, stress tools, communication skills, creativity techniques, learning skills and study techniques, and career development skills. The cost is very inexpensive.

7. *Mycoted* is a company dedicated to improving creativity and innovation for solving problems worldwide, they are a central repository for creativity and innovation on the Internet as a summary of tools, techniques, mind exercises, puzzles, book reviews, etc., that is open to all (see http://www.mycoted.com/Main_Page).

8. *Books* that offer a variety of tools and techniques for enhancing creativity are:

- Michalko, M. (2006). *Thinkertoys: A Handbook of Creative-Thinking Techniques,* 2nd ed., Berkeley, CA: Ten Speed Press.
- Michanek, J. and Breiler, A. (2014). *The idea agent: The handbook on creative proc-*

esses. Second Edition. New York: Routledge
- Sawyer, K. (2013). *Zig Zag: The Surprising Path to Greater Creativity.* San Francisco, CA: Jossey-Bass.
- Tanner, D. & Reisman, F. (forthcoming 2014). *Creativity As A Bridge Between Education and Industry Fostering New Innovations.* New York: CreateSpace.

9. Atmosphere

All of our senses—what we see, hear, feel, taste, smell, and touch—influence our state of mind. A positive atmosphere contributes to a positive and creative state of mind that enhances original thinking. Some people thrive in loud, people-filled areas with much activity. Others need quiet and calm to think clearly and creatively. Individuals can be encouraged to find that place, noisy or quiet, which makes them feel comfortable, have them focus on their sensory input preferences, and engage in creative thinking in the best atmosphere for them.

Isaksen (2009) offered the following suggestions to establish a creative working climate:

(a) you can influence the climate;
(b) create opportunities that lead to intrinsic motivation;
(c) provide appropriate levels of autonomy;
(d) promote trust;
(e) allow time for reflection and elaboration of ideas;
(f) encourage playfulness and good-natured joking;
(g) reduce interpersonal conflict and tension;
(h) treat ideas with respect;
(i) encourage sharing different points of view; and
(j) encourage appropriate risk-taking.

All of these suggestions speak directly to a creative environment.

10. Inspirational Supports

Pictures, words, sounds, and software can be used for inspiration. Surround yourself with inspirational props. In coming up with a name or an illustration idea or a hook for your next creativity responsibility, use magazines, phone books, junk mail, cereal boxes, poetry, or crossword puzzles to generate ideas. Collect whatever materials inspire you—that give you ideas. Even computer programs such as IdeaFisher[4] can help you and those who report to you develop your natural creativity and foster creative thinking.

11. Identify Your Creative Challenge

Originality involves clearly defining what creative challenge you need to meet. Are you looking to create an exciting new process to eliminate boredom in routine tasks? Is your goal to help folk generate more ideas from which they can choose a product line? Do you want a new corporate logo or website design? Are you trying to come up with an exciting or unusual holiday card or poster within time or budgetary constraints? Whatever the challenge, direct your thoughts and activities toward that goal. Focus and awareness are key.

4. http://www.ideafisher.com

12. Resist Premature Closure

It appears that "experts" in a field become so committed to a standard way of doing something that they do not even consider alternative approaches. This is an example of coming to premature closure due to blindly accepting the status quo. It also relates to squelcher behavior, e.g., "that's how we always do it" or "let's not reinvent the wheel here" or "it's been the same for 20 years, so it must be good.." Torrance (1979:74) pointed out that when "faced with any incompleteness or unsolved problem, almost everyone tends to jump to some conclusion immediately. Frequently, this jump is made prematurely – before the person has taken the time to understand the problem, considered important factors involved in the problem, and thought of alternative solutions." It is necessary to defer judgment, in order to resist premature closure and remain open. In writing (e.g., concept paper for a new product), this often means going through a process of multiple-stage drafting as an aid to thinking and refining words on paper. In R & D, it can involve generating multiple possible causes and potential solutions of problems.

13. Good Bad Interesting

Good Bad Interesting (GBI) creative thinking involves considering your central theme, idea, or challenge, and thinking about what's good about it, what's bad about it, and what's interesting about it. Generate as many examples of each as you can think of, but try to be fairly equal in each category. Too much of one or another demonstrates bias in your thinking. This is not about finding the "right" answer. It's about looking at all of the possible interpretations of an idea. Most people react to a new idea by either liking or disliking it. The Good Bad Interesting exercise forces creative thinking to generate multiple perspectives on an idea. It shows that ideas can be seen as good, as bad, or as interesting, depending on the particular frame of mind you start from. Design engineers learn that any idea can be looked at in a different way by reframing it. The idea changes in the mind of a person depending on how they are looking at it. This is important to remember in all negotiations between people with opposing viewpoints, as well as in trying to connect with an audience as a speaker. The GBI creative thinking exercise enables one to understand other people better, resulting in a more flexible thinker and therefore, an effective presenter.

14. How Are They Alike?

The "How are they alike?" activity enhances flexibility, generating numerous categories (Bruner, 1966). Using the list: orange, apple, banana, potato, rock, water, air—ask "How are an orange and an apple alike?" They are both fruit (nominal or naming). They both grow on trees (intrinsic functional category—what they do). They are round (perceptible category- what they look like). You can eat them both (extrinsic functional category—what you do to them). Then add another object: "How are an orange, apple, and banana alike?" Keep adding an object. Commonalities change as you add more objects and the commonality becomes more abstract. This is a great group activity as an ice breaker. Also, diagnostically, it is interesting to observe how folk drop out as the common element becomes more abstract (e.g., adding rock to the sequence).

15. Reversal

A creative activity is to have one look at something from an opposite viewpoint. Instead of looking up at an object, look down at it. Look from the inside instead of at the outside, and so on. For example, consider that a room is dark. You are looking for ways to make it lighter. Instead of looking for ways of adding light, look for ways of removing dark, for example, by putting mirrors or white paint in darker corners. Another example is using a reversal as a simple attention-getting device (Straker, 2010, 2011) such as the tried and true "the dog bit the man; the man bit the dog." Reversals stimulate new thinking when you are stuck in a rut. Use this activity to reframe a problem, looking at it from a different angle, or when seeking different views to define a problem.

16. Absence Thinking

This technique relies on the fact that people are very good at seeing what is there, but not at all good at seeing what is not there. Absence Thinking (Straker, 2011) compensates for this by deliberately forcing us to notice things not usually apparent. For example, watch people and notice what they do not do. Make lists of things to remember that you normally forget. In other words, deliberately and carefully think about what is absent. This activity is helpful when you are stuck and unable to shift thinking to some other approach. It is analogous to the importance of negative space to artists. For fiction writers, it may help shift perspective in a story from foreground to background or from the view of a central to a peripheral character or event. For writing contracts, it forces you to imagine what your client will question or what trap might kill a deal.

17. Role Play

Role play (Katz-Buonincontro, 2006; 2008; 2011) may be used as a creative activity to familiarize participants with concrete situations that they can get a better feel for. Role play helps make abstract problems more concrete and real, allows for immediate feedback, facilitates expression of attitudes and feelings, provides opportunities to
speculate on uncertainties, and involves applying knowledge to solving problems. The six hats activity above involves role play.

18. Mindstorming

Mindstorming (Tracy, 2007) or individual brainstorming involves generating ideas or answers to your challenge. Keep going until you have at least 20 answers or ideas. Your first answers will come easily. Keep pushing until you have reached at least 20. Just let the answers and ideas flow. Once you have your 20 ideas, go back over them and choose the one that feels best or right to you. Trust your instincts with this. When you have chosen your idea, you can put that at the top of another page, and then do mindstorming to generate 20 ideas on how you could implement that idea. This activity is especially relevant to creative problem solving.

19. Dreamstorming

Dreamstorming (Butler, 2005) involves mindstorming while asleep. Have a notebook ready to record thoughts either during the night or first thing when you awaken. These notes become the fodder for creative problem solving or for tasks that involve writing.. Bane (2010) provides a series of resistance-to-writing behaviors: freeze, or writer's block; fight, which includes excessively harsh criticism, negative self-talk, self-hating of the writing or the writer, perfectionism, and sabotage behaviors such as missing deadlines, losing files, having accidents, etc.; and flee, which involves escaping the discomfort associated with writing, procrastination, researching beyond what's necessary, overscheduling or overcommitting to other priorities that "must" be addressed before the writing, and waiting until the last minute to start an assignment. Bane (2010: 48) states that "many writing instructors emphasize freewriting, clustering, brainstorming and other approaches that suggest speed is the solution to self-censorship. But the focus on speed can also introduce stress." Dreamstorming is an alternate technique that involves imagining more and writing less as an effective way to begin crafting a written document.

20. Brainwriting

Brainwriting (Straker, 2011) is an adaptation of brainstorming, the generation of many ideas to solve a problem with no premature evaluation occurring. Suppose the challenge is: "What can I write about?" Write this challenge down and reflect upon it for a short time by writing down some salient questions related to the challenge with multiple answers to each question: What am I really interested in writing about? Answers: I love growing orchids. I could share my Weight Watchers progress. I'll never forget my interaction with ShuShu, the camel, upon my visit to the Dome of the Rock in Jerusalem, the sacred rock upon which Isaac was almost sacrificed and from which Muhammad supposedly rose to heaven, leaving his footprint in a rock. What recent experience might be of interest to you?

Keep writing questions and answers to your questions until no more answers emerge. Just as in brainstorming, do not analyze, categorize, or evaluate the questions or answers you have generated; merely review and digest what you have written. The answer to your challenge often becomes apparent. Brainwriting may be applied to a group-writing pedagogy to get ideas flowing and to trigger new ideas. Give participants a brainwriting sheet, with space for a topic at the top of the page, and rectangles below into which ideas can be written. This activity is helpful for those who need help generating ideas that are creative. Each person writes a topic at the top of the page. It can be different for each person or it can be the same for everyone. If the topics are for an individual, then they may include their name, so the page can eventually find its way back to them. Now each person passes the sheet to another person, who writes down one or more ideas to enhance the topic, and so on until the sheets are filled up.

These phrases then became the structure upon which to build a story. How can this activity be applied to a business challenge? Story telling is a powerful heuristic used by the marketing arm of businesses or as a backdrop to present to a client.

21. Brutethink

The idea of the Brutethink creative thinking technique is that by forcing a random idea into

a challenge or problem situation, you produce out-of-the-ordinary choices to solve your problem (Michalko, 2006: 157–169). Steps in the Brutethink process are as follows:

1. Bring a random word into the problem (e.g. a dictionary, newspaper, or book);
2. Think of things associated with the random word;
3. Force connections between the random word and the challenge, also between the associated things and the challenge;
4. List all your ideas.

For example, your challenge is: "How do I incorporate employee's creative thinking strengths to address our low morale problem.?" My random word (from Michalko's 2006 list of random words) is catsup. Catsup is red and liquid. Catsup is spicy. Catsup adds flavor to other foods. Why is ketchup also written catsup or pronounced "catchup"? According to Michael Quinion[5] like their Eastern forerunners, Western ketchups were dipping sauces. The first ketchup recipe appeared in Elizabeth Smith's book, The Compleat Housewife of 1742, and it included anchovies, shallots, vinegar, white wine, sweet spices (cloves, ginger, mace, nutmeg), pepper and lemon peel. Not a tomato in sight—tomato ketchup was not introduced until about a century later, in the United States, and caught on only slowly. Ketchup is often used with fries or chips, hamburgers, sandwiches, and grilled or fried meat. Ketchup is also used as a base for various sauces. It is a typical accompaniment for the meat pies of Australia and New Zealand.

The world's largest catsup bottle—in Collingsville, Illinois—is a water tower which was built in 1907. The catsup plant is now closed, but the water tower has been preserved and restored to its original 1949 appearance[6]. H. J. Heinz Co. is soon unveiling the first major packaging change to the to-go ketchup packets in 40 years. The new design has a base that is like a cup for dipping and also a tear-off end for squeezing[7]. Thus, the random word catsup opened many paths for triggering creative thinking—historical, factual, humorous, appealing to tastes and smells, visual, global, and community initiative.

22. Free Writing

Freewriting or stream-of-consciousness writing is a strategy intended to encourage the development of ideas without concern for the conventional rules of writing. When freewriting, don't stop to review, to cross out, to worry about spelling, or to wonder what word or thought to use The only rule to follow in freewriting is simply not to stop writing (Elbow, 1998). 6. Choose the company you keep

23. Risk Taking

Mehta (2013) and Sundheim (2013) discuss smart risk taking. Successful entrepreneurs have a unique approach to risk taking as they avoid a loss-avoidance mode, and instead focus on another part of the brain--the reward centers. Mehta suggests some risk taking strategies**:** 1. Figure out what motivates you**,** 3. Take baby steps, priorities, 5. Say yes**,** (Risk-taking—the good kind—can be contagious); 7. Practice quick decision-making**.** Risk taking is a creative characteristic.

5. http://www.worldwidewords.org/qa/qa-rul1.htm.
6. http://www.catsupbottle.com/.
7. http://www.foxnews.com/. story/0,2933,584809,00.html

12. Do the fun part, 14. Set

25. Mind Mapping

Mind maps (Buzan, 1996) are a graphical method of taking notes that can also be used following many of the above activities geared to generating ideas. Their visual format enhances understanding broad meanings of words or ideas, often with colors and symbols. They generally take a hierarchical or tree branch format, with ideas branching into their subsections. Mind maps allow for greater creativity when recording ideas and information, as well as allowing the writer to associate words with visual representations. The "Laws of Mind Mapping" were originally devised by Tony Buzan when he codified the use of imagery, color, and association and coined the term "Mind Mapping." See the following URL for a summary of creating a mind map that is based on Tony Buzan's structure: http://www.mind-mapping.co.uk/make-mind-map.htm. Following is an example of a mind map.

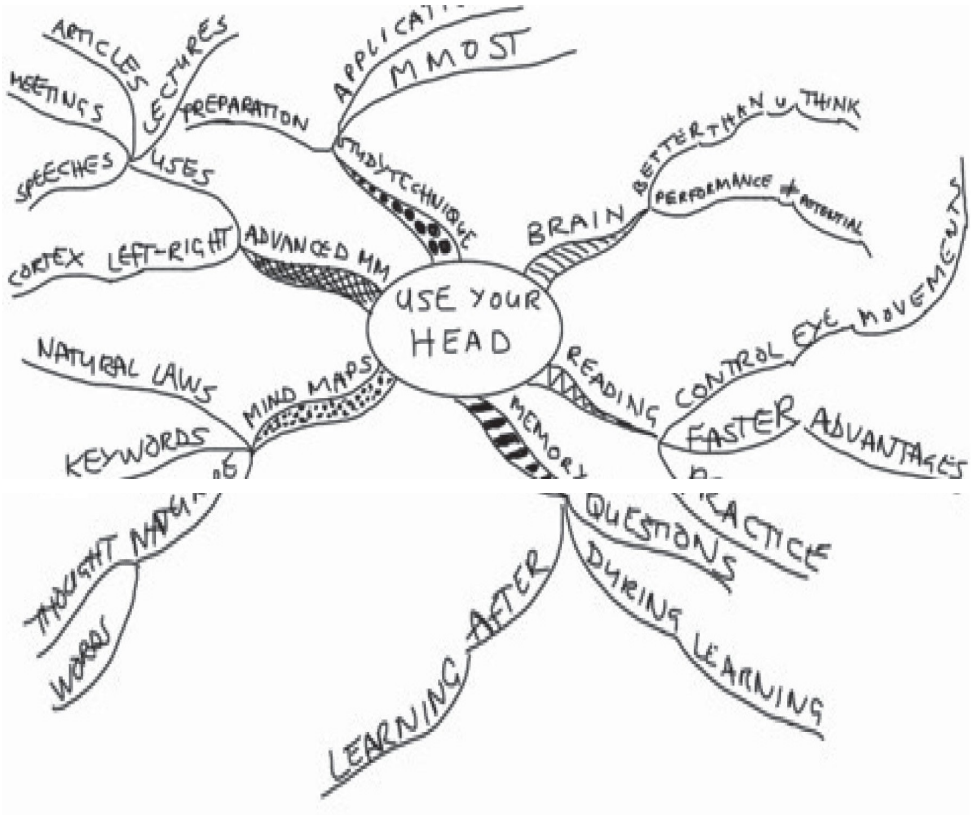

Figure 1: Sample Mind Map

Other examples made by software created by Tony Buzan can be found at http://www.thinkbuzan.com/us/index/welcome. Other resources for mind mapping software are: MindTools[8] and Personal Brain[9].

26. Diagnostic Creative Intervention-Mediation Process[10]

A Diagnostic Creative Intervention-Mediation Process (Tanner & Reisman, forthcoming

8. http://www.mindtools.com/AboutMindTools.htm.
9. http://www.thebrain.com/products/personalbrain/apps/writing
10. The Diagnostic Creative Intervention-Mediation Process may be applied to both education and business settings.

2014) integrates three foci; namely, *diagnostic teaching/supervision, creativity,* and *mediation skills*. Diagnostic teaching/supervision is a creative problem solving instructional/learning model that is framed upon generic or core influences on learning, in depth content knowledge, and pedagogy knowledge. In depth content knowledge refers to the skills and knowledge that underlie one's discipline or job. Pedagogy refers to either teaching or supervisory methods. Generic influences on learning refers to one's *creative strengths* such as those tapped in the RDCA described next. These include; *ability to attend to salient aspects of a situation* (e.g., to notice the important and most relevant aspect(s) or attribute(s) of a situation and simultaneously disregard extraneous cues); *use of Problem-solving Strategies* (e.g., takes a systematic organized approach to tasks as compared to those who flounder randomly. never moving beyond a trial and error approach); *ability to make decisions and judgments* involves recognizing salient aspects of a situation, using important information given, being aware of missing information, abstracting essential from nonessential details, evaluating relationships embedded in a situation, and making choices among alternatives; *ability to draw inferences and conclusions and to hypothesize* involves generating a set of possible alternatives, dealing with future ideas, and making judgments according to a set of criteria, classifying objects or ideas, finding logical relationships or analogies, performing simple operations of logical deductions, and using similes and metaphors. When teachers and supervisors pay attention to these core influences on learning, they are better able to understand and service their students, employees and clients.

27. Reisman Diagnostic Creativity Assessment (RDCA)

Creativity research on characteristics of creative people form the structure of the RDCA. Research-based creative characteristics include *imagination* (Dewey, 1934; 1957), *insight* (Davidson, 1992; Sternberg and Davidson, 1985), *intuition* (MacKinnon, 1998), introversion (Myers and McCaulley, 1985), *naivete or openness to experience* (Ghiselin, 1952; Piirto, Montgomery and Thurman, 2008), *perceptiveness* (Myers and McCaulley, 1985), and *perfectionism* (Piirto, Montgomery and Thurman, 2008). Eleven factors that underlie creative thinking, that are prominent in the creativity research literature (Guilford, 1967; Reisman and Torrance, 2002; Torrance, 1974), and that relate to creative behavior, include the creative thinking characteristics shown in Table 3.

Factor	**Definition**
Originality	Presents unique and novel ideas; creates unusual
Fluency	Generates many ideas
Flexibility	Generates many categories of ideas, involves the
Elaboration	Adds detail (verbal or figurative)
Tolerance of Ambiguity	Comfortable with the unknown
Resistance to Premature Closure	Keeps an open mind
Convergent Thinking	Analyzes, evaluates, comes to closure
Divergent thinking	Generates many solutions (related to fluency)
Risk-Taking	Venturesome, daring, exploratory
Intrinsic Motivation	Satisfied by inner drive; ability to enjoy
Extrinsic Motivation	Needs reward or reinforcement

Table 3. Factors that Represent Creative Thinking Characteristics

These eleven creativity characteristics or factors comprise a self-report assessment, the Reisman Diagnostic Creativity Assessment (RDCA), that is built upon the Torrance Tests of Creative Thinking (TTCT) (Torrance, 1974), which in turn is based upon Guilford's Structure of the Intellect model (Guilford, 1967). Although some (Carroll, 1993; Wallach, 1976) reported concern regarding the predictive value of creativity tests, more recently others "concluded that creativity scores are better predictors of creative life achievements than IQ or school grades" (Cropley, 2006: 127; based on research cited by Plucker and Runco, 1999).

The RDCA comprises 40 statements evaluated on a 6-point Likert-type scale (strongly agree, moderately agree, mildly agree,…strongly disagree) and judged according to how the test taker perceives that each statement describes him or her. The purpose of the RDCA is to identify a person's areas of creative strengths and those that the individual might wish to enhance. Thus, its main purpose is diagnostic rather than predictive. Results of the RDCA may be used by supervisors or educators to determine which factors their employees or students might wish to strengthen (using some of the activities presented here), and which factors already inform their creative thinking strengths. Awareness of one's creative strengths is the first step toward being creative.

Summary

The overarching umbrella of this chapter is the cross-fertilization of knowledge about creativity and innovation between the worlds of education and industry. All innovations have a key component in common; namely, creative thinking that generates a novel, useful idea to meet a triggered need

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Fredricka K. Reisman, Ph.D. is professor and founding Director of Drexel's School of Education, oversees the online Master's in Creativity and Innovation degree and certificates in the School of Education, as well as the forthcoming online Ed.D. concentration in Creativity and Innovation. Additionally, she served as Assistant Provost for Assessment and

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2 NICHOLAS M. STAICH

THE ROOT OF CREATIVITY: THE EFFECT OF PERSPECTIVE ON CREATIVITY

ABSTRACT This chapter examines the role of perspective in creativity. Many creative efforts fail because the underlying need or situation is misunderstood, usually the result of a lack of clear vision. This is a problem for business in particular, where the intellectual environment of a business culture can elevate convergent methods of thinking that are not conducive to creative idea generation. This makes innovation and creativity more elusive, and current metrics fail to capture the need for talent that thinks divergently. The biological and psychological reasons why high level logic can cancel out creativity are explored, as are methods to increase creative capacity. A look at historical applications of applied creativity and the subtle shifts in perspective that precede them illustrate the importance of this relationship to successful deployment of creative endeavors. An analysis is also explored of businesses that have successfully utilized creativity in their policy, operations, or development areas to demonstrate the practical application of creativity in business.

The Root of Creativity: The Effect of Perspective on Creativity

Creativity is the skill that allows individuals to produce fantastic works of literature, pulse quickening sonatas, or amazingly aesthetic works of art. It also allows for the generation of new products, business models, and markets for companies. People, and companies, struggle with creativity as they try to produce unique offerings that add value to the world. Unfortunately, many are defeated in their creative journey because they enter the creative process with a focus on the works they wish to produce: the next product, a new business model, or redefining the market.

The creative problem shows itself as a manifestation of that pursuit of a goal. True creativity starts not with trying to see what we wish to create, but rather by altering the way we see things as they currently exist. Creative issues are usually issues of perspective. In the successful deployment of personal endeavors, as well as highly regarded corporate initiatives, the determining factor of successful creativity is in the way the creative entity perceives the world around them. Van Gogh, Mozart, Ford, Netflix, 3M and Apple - all of these, some corporate and some not, were able to view the world as it could be and not as others currently saw it, and more specifically they saw how the world wanted to be. That vision allowed success where others often foundered. They were able to see the patterns that were emerging and address the real underlying needs and causes, not merely the symptoms. This is stated well by Tom Kelley, CEO of IDEO that is an innovation consultancy firm; he writes: "Innovation is a very goal-oriented process, and hot groups under tight deadlines tend to focus closely on the end results. As you step through the innovation process, try thinking verbs, not nouns. It means not focusing too much on the object or artifact. Everybody's in the business of creating experiences, so focus on the verbs, the actions. The goal is not to create a more beautiful store. It's to create a better shopping experience." (Kelly & Littman, 2001)

Better instructions for business in achieving enhanced creativity can be found in the more abstract world of art. In *Drawing on the Right Side of the Brain*, her book that is singularly designed to get a more analytical mindset to rediscover its creative roots, Betty Edwards (1979) advises: "Drawing is

not really difficult. *Seeing* is the problem, or, to be more specific, shifting to *a particular way of seeing*."

By teaching drawing to neophytes she found that the issue with their drawing was not a lack of artistic aptitude, but their perception of the subject matter and their treatment of it. She helped them access their creative faculties by learning new ways of processing the information. Her students showed tremendous improvement within a year in their drawing of realistic portraits while simultaneously learning "to shift into a new mode of thinking, a mode of vast potential for insightful, creative problem solving" (Edwards, 1979) Perspective in business is about more than simply identifying a problem; it is about identifying the right problem. "Seeing" as it pertains to business can take many forms: creative information analysis, studying current processes, and, most importantly, observing the manner in which customers use the products and services. This last point is something often overlooked as businesses fail to observe without bias. Tom Kelley (2001) points out that by properly observing how consumers use their products, companies can realize that: "It is precisely this sort of observation-fueled insight that makes innovation possible. Uncovering what comes naturally to people. And having the strength to change the rules."

Businesses must seek to learn and apply creative mental processes within their culture to optimize their future growth, and not undermine these different methods by believing they are any less potent than more familiar approaches with rigidly analytical models. Businesses struggle with creativity because of the risk adverse environment. Risk is a necessity for growth, and creativity needs room to breathe without fear of reprisal for failure. Ed Catmull (2014), President of Pixar, states: "I think most people are creative…I think the central problem is the stuff companies put in place that block the natural abilities that are already there. Accidentally, and without intending to, companies smother creativity." Sometimes chances need be taken, and those chances can pay significant dividends, since: "Chance offers insights you didn't anticipate. It's a well-accepted truth that inventions and discoveries often result from accidents or experiments that went awry" (Catmull, 2014). Thomas Edison attributes his success in large part to his willingness to fail, as these failures presented lessons from which to grow: "Negative results are just what I want. They're just as valuable to me as positive results. I can never find the thing that does the job best until I find the ones that don't" (Library of Congress, 1997). Edison also believed in the importance of tenacity when creative progress was in the works." To be truly creative, accept that even the most learned of us does not know everything; creativity does not correlate with how much you know, but by how you see patterns. This means a healthy dose of humility will go far in aiding success in creative endeavors, as a mind sure of itself is often closed to new reasoning and ideas, and a good strategy from Tom Kelley (2001) to grease the wheels of creativity suggests: "Be open to surprises from within and outside your organization. Try approaching projects with humility and the knowledge that answers may come from places you least expect."

Attaining a creative mindset is a problem as old as time. Humanity's ancient ancestors first utilized creative applications in figuring out how to use tools by looking at their environment with a different perspective, and understanding that a stone could be more than a heavy lump of mineral, but also an ignition source, a breaking surface, a weapon, and more. Rudimentary as these discoveries may seem to our more developed intellects today, these were paradigm shifts in their respective times. What's more is that creativity was a paramount skill for survival; those who could leverage their creative aptitudes had an evolutionary advantage over those who could not. This is no different today in business, as creativity is a principle tenet of a business's ability to survive throughout the cycles of Invention, Improvement, and Innovation as outlined by Dr. George Land (1973) in his book *Grow or Die*. Businesses must choose whether to grow and develop new aptitudes and strategies, improving and innovating through creative endeavors, or die as their markets change and their interests are ultimately run asunder. Remaining creative requires more than an ability to analyze trends in historical data but also the ability to see a larger picture, such as the shifting of the company's markets and demographics, in time to adjust and capitalize on new opportunities. There is a difference between acquiring the information necessary to make such observations, and creatively

interpreting the significant patterns while recognizing future opportunities. This mindset of abstraction and seeing things as more they appear to be is a principle tenet of creativity. It demands the suspension of logical constraints to be effective, and the mind must have permission to roam, developing and manipulating factual patterns in varying degrees like the shifting lens of a mental kaleidoscope, but not judging the ideas and discarding them at inception. This idea is so strong it has evolved with us over millennia, and emerged as one of the major pillars in religion, most notably in Eastern traditions.

Daoism (and later Zen) stresses attaining an "oneness" with all things, and a realization that what we believe to be separate things, or "distinctions", are actually all just facets of the "Dao". There are several references to keeping the mind as that of a "newborn child": observant, understanding, and open to new ideas. Meditation was important for "quieting the mind", and ultimate enlightenment resulted in understanding of the interconnection of all things. *The Daodejing* by Laozi (Ivanhoe, 2002) provides evidence of this belief, wherein was written:

"Concentrating your *qi* ("vital energies") and attaining the utmost suppleness,
can you be a child?
Cleaning and purifying your enigmatic vision,
can you be without flaw?
Caring for the people and ordering the state,
can you eliminate all knowledge?"

This passage demonstrates how true success in these exercises is not the accumulation of knowledge, but rather a conscious release of paradigms and perceived understandings. It is not suggesting knowledge has no value, simply that there are other considerations than what is already known, and the gateway to these unobserved interconnections was a suspension of what we now refer to as convergent thinking. Those attuned to these divergent patterns of thought were said to be "Virtuous", and by way of their Virtue they were enlightened:

"Those who are steeped in Virtue are like newborn children;
…Knowing Balance is called "constancy."
Knowing constancy is called "enlightenment."" (Ivanhoe, 2002)

This psychological concept extended to martial arts, known as "Beginners Mind", where once mastery of technique is achieved, advancement involves developing an aptitude to use techniques without conscious thought. Beginner's Mind allows reflexive responses and lightning quick reactions unencumbered by the delay of the logical convergent mind processing the stimuli occurring during battle. Master swordsman Miyamoto Musashi, who was undefeated in over fifty duels during his lifetime (an unheard of feat in the 1600s), wrote of the importance of Beginner's Mind in a time when the loss of a duel also usually meant the loss of life. Musashi understood the importance of creative application of technique without the need for conscious thought, and he taught others that strategy should be equal parts devout learning and careful reflection. In his seminal work "The Book of Five Rings" (Musashi, 2012) he states:

"These things cannot be explained in detail. From one thing, know ten thousand things. When you attain the Way of strategy there will not be one thing you cannot see.
…With your spirit open and unconstrained, look at things from a high point of view. You must cultivate your wisdom and spirit. "

Kendo, or Japanese Fencing, is still practiced globally today by people who work to develop and enhance the ability to enter this mental state and attain the resultant psychological flow. Escaping the fixed confines of what is already known is one of the hardest steps in creative thinking, but it has

been demonstrated repeatedly to be the fertile soil from which invention, improvement, and innovation have developed.

There has been an injection of Eastern styles of thought in Western cultures, particularly business cultures, via the application of Japanese systems focusing on efficiency and effectiveness such as: Continuous Improvement, Kaizen, Lean, and more robust organizational systems like the Toyota Production System. While these systems often have heavily analytical components, they also recognize that to be truly beneficial many ideas must be explored. Sometimes the best option is a refinement of an existing process while other times the best course of action is complete process renovation. Developing business solutions necessitates overcoming "Functional Fixedness", whereby lateral or divergent thinking is superseded by prior working knowledge and assumed constraints. This is seen in corporate culture when questions about current practices elicits the response "we've always done it that way" or some similar variant. This is evidence that the process is so deeply ingrained in organizational functions that it is no longer questioned or scrutinized. Such functions can be removed or improved by applying more recent technological advancements or best practices which did not exist at process inception. Businesses focusing on more intuitive outlooks at problem solving are stirring change since discussions of more imaginative problem solving are beginning to trickle down through academia, where students study new systems in classes like Operational Management. This simultaneously produces deeper canon in psychological studies of the impact and resolution of convergent versus divergent thinking. Sir Ken Robinson (2008) discussed the importance of students learning divergent thinking methodologies and their contribution to creativity during his presentation on Changing Paradigms of Education when he stated: "Divergent thinking isn't the same thing as creativity. Creativity, as I see it, is the process of having original ideas that have value. Divergent Thinking isn't a synonym for creativity, but it is an essential capacity for creativity."

Divergent thinking has become accepted and is recognized as a necessary component of effective problem solving. An article on creativity in *Psychology Today* stated: "According to the Geneplore model, creativity involves a cyclical process of generating ideas and then systematically working out which ideas are the most fruitful. The generation stage is thought to involve divergent thinking whereas the exploration stage is thought to involve convergent thinking" (Kaufman, 2012). In this way, it is divergent thinking that allows one to "change perspectives" and view a problem from varying angles. The importance of divergent thinking in business is related to the degree a business can generate new perspectives for solutions. Correctly identifying the root cause of the issue is imperative in preventing misguided solutions that either solve the wrong problem or only address symptoms. Kaufman (2012) demonstrates this idea, saying: "We can't just ask them to figure out one correct answer. We have to give them the opportunity to tell us what the problem is in the first place." Business solutions, particularly in the west, are the product of convergent thinking. Western work and educational cultures focus on convergent, or linear, thinking in their instruction, testing, and measurement metrics. When businesses are attempting to solve their issues, they arm themselves with significant amounts of data and information, they bring on the "best and brightest" talent, and they often look to the metric of "x" years of experience held between the team members or high performance in academic settings. Traditionally this has been viewed as the way to build a strong team with a high probability of successfully determining an optimal course of action for the company, but they are teams better designed for refining current offerings than developing new opportunities. The teams who successfully develop new opportunities are unorthodox and generally nonconformist, and this non-conformity grants them the flexibility to challenge long held industry beliefs and dogmatic practices deeply ingrained in the corporate culture. A better metric for creativity would be an individual's scores on the Torrance Tests of Creative Thinking, which measures creative aptitudes like fluency, originality, elaboration, and resistance to premature closure (Torrance, 1998). It is possible to increase divergent thinking skills through activities like creative writing and meditation when practiced regularly. Unfortunately, divergent thinking has been shown to degrade in our current educational systems due to a focus on convergent thinking (Robinson, 2008) .

George Land established this in a longitudinal study with 1,600 children tested from age 3-5 until they were adults: at age 3-5, 98% of the children tested at genius levels for divergent thinking, but by age 15, only 10% maintained that rating; in 1992 over 200,000 adults had taken the same test and only 2% scored in the top tier (Land & Jarman, 1992). Critical reasoning and proper vetting of solutions is still vitally important, but so are the underappreciated contributions which divergent thinking can present to a business or industry. There is little correlation between high IQ and creative aptitude (Kaufman, 2012), and manipulating something familiar in a business environment is still a convergent process, but truly redefining a corporate culture or developing a product new to the world requires divergent thinking and a whole new way of looking at the problem.

The need for divergent thinking is based on the biological fact that the brain cannot operate at two different levels simultaneously. Powerful as they are, our minds have finite bandwidth for thought processes. Mihaly Csikszentmihalyi (2004) explained this concept:

> Our nervous system is only capable of processing about 110 bits of information per second. In order to hear me, and understand what I'm saying, you need to spend about 60 bits per second. That's why you can't understand more than two people talking to you. When he is completely engaged in this process of creating something new, he doesn't have enough attention left over to monitor how his body feels, or his problems at home, he can't feel even that he's hungry or tired. His body disappears; his identity disappears from his consciousness because he doesn't have enough attention…to really do well with a lot of concentration and at the same time to feel that he exists.

This supports a framework wherein the mind can either enter a conscious creative state (alpha wave) or a conscious awareness state (beta wave), but not both simultaneously (Schilling, 2013). Understanding this, it is possible to see why the convergent thinking models employed in business today, which are optimized for analyzing and determining best single outcomes, are inefficient and ineffective when trying to be creative. The brain's neural system inhibits thinking outside of paradigms already established in the mind, so your solutions are only as creative as your current base of knowledge.

Many are familiar with the email containing the 4LPH4NUM3R1C M3554G3 (ALPHANUMERIC MESSAGE). This email contained a paragraph of written text that had been coded to use numerals in place of certain letters. Some people could not decipher the message, but many were able to read it because the brain was able to determine the word based on the "shape" of the word, not the spelling. The more that you read, the faster you comprehended as the brain adapted to the new sequence. This is an area that mixes a light dash of divergent thinking with a heavy dose of convergent thinking. The divergent is the flash of recognition, the heavy mental lifting, that the sequence is not gibberish but in fact a code; then via convergent thinking the brain compares the code to patterns it knows. This is a microcosm of what the true creative process looks like: the first stage is a divergent, fluid, and unrestrained mind space where all ideas are acceptable; then a convergent, analytical filter is applied to whittle down possible outcomes that optimize the chance of success. What we think of as creativity is predominantly in the "Generation" cycle where our minds are allowed the space to make unseen connections and develop new models, but it truly can be an iterative process where refinements of one exploration cycle create new paradigms for the next generation cycle. Care must be taken not to create filters so stringent that new opportunities are disregarded prematurely because they appear unorthodox or non-conventional. While these thought cycles work together, they can only be utilized independent of one another. Through divergent thinking we permit our minds to expand into new territories of thought and understanding, allowing for faster and more insightful shifts in perspective applicable to the problem. This was true throughout history, and remains valid even in a world of ever increasing technology.

As we enter the age of big data, with online shopping, social networks, gamification, and individual web presences, the internet provides millions of people creative outlets and information to flourish. Petabytes of data flows through innumerable databases. The true power of this data is only realized when someone extracts meaning from the torrent of random pieces. It cannot be understated how ascertaining usable information from these data streams requires creativity, and though it may seem contradictory, it is not. Tom Davenport, a leading expert on analytics, states:

It's often felt that creativity is the opposite of quantitative analysis. Creativity is viewed as being exploratory, free thinking, inspiration based, and visionary. Quantitative analysis is often viewed as being tedious, rote, and by the numbers. We feel strongly, however, that creativity and analytics are hardly opposites, and are often closely related…creativity is an important component of successful analytical approaches to problems. (Davenport & Kim, 2013)

Analytics requires creativity to generate information from data, lest one be "data rich and information poor." The real problem must be properly understood to make big data valuable. Perspective is essential, and in the most analytical of fields, perspective's dominance in creativity and business becomes apparent:

Half the battle in problem solving and decision making is framing the problem or decision in a creative way so that it can be addressed effectively…Given a particular organizational or business context and a set of constraints, creative framing can change the context, view it in different ways, and reduce or eliminate constraints.(Davenport & Kim, 2013)

The most complex analytical queries begin with a solid foundation of proper perspective, and creativity is the bedrock from which that perspective is carved. Many companies have successfully applied creativity to their organizations, and when done properly it can look like pure genius, but it is often mistaken for solid convergent thinking because it seems like common sense.

In 2006, Ford brought former Boeing executive Alan Mullaly to fill the role of CEO. As an auto industry outsider, many believed failure was imminent; the auto industry and Ford in particular, were "bureaucratic and hostile to new ideas" (Kiley, 2009). Outsiders were reviled at the executive level, and the culture thrived on keeping other business units in the dark instead of transparency and collaboration in developing new vehicles. Mulally was able to break down communications barriers and instill a new, cooperative culture into Ford, and he had a keen eye on the consumer and future trends in automotive progress. Mulally observed Ford's need to pro-actively reposition its product lines because rising fuel costs were altering consumer desires, and he had Ford lead the charge in the transition to smaller, more fuel efficient vehicles even though SUVs were vastly more profitable. That insight paid off big for Ford; when Mulally tried to get funding to retool his plants, he sought out $18 billion in financing, but his vision was so clear and convincing that investors lent $23.6 billion (Vlasic, 2009). Another Ford innovation was embracing social media as a way to leverage its brand and energize key demographics about its products; this approach was the first time a major corporation used social media as a primary marketing medium (Donlon, 2011). Still, Mulally is ever vigilant about staying innovative, and with good reason; it is crucial to maintain these successes since: "Going forward, the biggest threat to Alan Mulally and his team is not failure, but success. Ford has seen turnarounds before…only to have the organization drift back to former habits. It's not due to hubris as much as reversion to the mean" (Donlon, 2011). For all of his accomplishments, Mulally has become a demi-god of innovation and creative application in business, but the brilliance extends beyond him to Bill Ford who brought Mulally on board. When asked why by senior executives who were taken aback by the decision to bring in an outsider, Bill Ford's answer to them was that "the company needs a fresh perspective" (Kiley, 2009).

Netflix demonstrated creativity in its domination of the home entertainment industry. It challenged Blockbuster, once thought an immovable fixture of the industry, by using divergent thinking and reframing the industry. Netflix changed the context of the business model from *what* content was available to *how* that content is delivered. In essence, Netflix's insight allowed them to change the industry from a content model to a logistics model. They actually did this twice: first leveraging internet and DVD technologies allowing for online shopping and the mail delivery system in 1997;

then again when Netflix was at the vanguard of streaming technologies in 2008 (Hastings, 2009). Netflix eliminated the need for brick and mortar institutions via the home delivery model, using functions of convenience (as people didn't need to leave the house), cost efficiency (as customers no longer needed to worry about late fees), and technological advances (since the internet and DVD technology made the business model viable). Blockbuster never adjusted their business to account for the new model until 2004, when it was too late due to Netflix's market share in the space; the irony is that Blockbuster declined purchasing Netflix when offered in 2000 (Auletta, 2014). Streaming became a vastly more profitable business model and proactively engaged the nascent technology trends that would redefine content consumption. Netflix continues to redefine content consumption, both by producing its own critically acclaimed original series like "House of Cards" and "Orange is the New Black" and by releasing all of the episodes of a season at one time for people to watch.

3M is one of the world's leading companies in innovation. With a product portfolio that covers the expanse of almost every consumer good imaginable, they about creativity. 3M's unorthodox employee strategies allow them to create an environment ideal for idea generation. 3M encourages employees to play pinball, take frequent breaks, and engage in frivolous activities allowing for moments of insight (Lehrer, 2012). 3M also has a program called 15 Percent Time, where employees are encouraged to develop and work on their own projects with 3M's resources, because "a core belief of 3M is that creativity needs freedom" (3M, 2014). According to 3M's website, "we believe freedom to explore is critical to developing new ideas and solving problems that will make a difference for everyone" (3M, 2014). This philosophy and its benefits have not gone unnoticed by other major innovators. Google has as one of its "Pillars of Innovation" a mantra of "Spark with imagination, fuel with data" (Wojcicki, 2011); they also have a 20 Percent Time where their engineers get to pursue whatever projects they wish to pursue.

No current discussion on creativity and innovation in business would be complete without mentioning Apple. Apple's products not only revolutionized hardware, but also software and distribution networks. Apple brought consumers the iPod, iPhone, and iPad. They developed a means of keeping an entire library of music on a computer smaller than a cell phone, and they changed the way media content was purchased and catalogued with iTunes software package, allowing people to alter their library and create playlists on the fly. Eventually they leapt into the smartphone foray with the first smartphone that had a touchscreen, centralizing phone and media in one interactive device. Then they gave the world tablet computers. Apple has been, and continues to be, a juggernaut of innovation. They too are victims of their own success because of the level of disruption their products have achieved, and how high expectations have been raised for them. Not all innovations are created equal, and not every innovation needs to shake the heavens. Apple continues iterating and innovating the refinements of their products, and these more subtle innovations should not be underappreciated since they create better user experiences. Apple understands that small innovations are just as important as large, industry changing innovations.

As business moves forward, dealing with ever complex problems and resource constraints, ideas and innovations must also become increasingly creative, expanding knowledge bases and aptitudes for solution generation. Corporate perspective should innovate and cultivate the assets of both sides of the mind, turning the corporate culture from one of "territorial aggression" for mindshare between convergent and divergent thought methodologies, to one of a "global village" that seeks to optimize the contributions from both styles of thinking. Increased divergent thinking capabilities permit greater creativity, and greater creativity facilitates fresh and innovative perspectives. This opens wide the door to new perceptions and previously unconnected ideas that can be culled to provide original insights for growth. In this way a fertile environment is created for the root of creativity to spring forth and bear fruit, while still maintaining the requisite levels of critical thinking and judiciousness needed for sound decision making. If the root of creativity is perspective and its application, then ensuring future success means businesses should consider their perspective on creativity, and the value it adds, within their own culture.

Author's Brief Bio

Nicholas Staich is a thought leader who loves innovation and continuous improvement. He has successfully driven continuous improvement initiatives in Manufacturing, Academia, and Non-Profit ventures using applied creativity and structured problem solving including Lean and Six Sigma. Nicholas is a lifelong learner, and he believes that diversity in knowledge fosters the best innovation. He graduated Magna cum Laude from Temple University's honors programs in International Business & Legal Studies, he was a Diamond Peer Teaching Scholar, he is a Six Sigma Green Belt, and he has attained certification as a Quality Engineer from the American Society for Quality. He currently works with Johnson Matthey Environmental Control Technologies NA with a focus on quality and continuous improvement.

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3 STEPHEN R. GROSSMAN

CRUISING TO AHA!

Overview

Cruising to Aha! is a new creative problem solving system developed especially for small business groups with limited resources (money, time, and people). A totally natural process, its power and efficiency derive from mimicking the same three steps that world class artists, poets, scientists, composers and a host of other inventive geniuses seem to experience in order to create breakthrough ideas, products and new aesthetic forms. To insure success in a reasonable time frame, we add some modern "high speed enhancers" that shorten the time while maximizing chances for an exciting new solution. These steps: Extinction, Mutation, and Selection, are the ones Charles Darwin proposed (Darwin, 1859).

In our business process, Extinction translates into dismissal of existing ideas as remedies for a business problem causing concern, Mutation is an external stimulus or random event that triggers a new idea, and finally Selection is a technique for modifying the new idea into a workable solution.

In addition to our demonstrated success with "Cruising", there is a major benefit for small groups who use this process. Since much of the work in the creative process is solitary and subconscious, a great deal of the effort is individual, with group members participating by themselves at their own convenience, then, sharing their input on a password protected web site. Aside from significantly lowering demands on their conscious time and personal presence, this design actually increases everyone's creative performance—It allows the group to virtually "Cruise" to an aha while not significantly altering their daily routine. (See Appendix A—Roles, Structures and the Flow of Events in our 3-phase process on pages 46.)

Introduction

The Nine Dot Problem:

I was first introduced to Dr. Robert Weisberg, a professor of experimental psychology at Temple University here in Philadelphia, about 30 years ago. I was teaching a course in Creative Problem Solving at a large corporation where I was also head of basic research in New Product Development. I had recently learned to facilitate "CPS" having spent a week in June for the previous 3 years at the "The Creative Problem Solving Institute" which was housed at Buffalo State University in New York. A mutual friend suggested that Weisberg was doing exciting research in the creative process, and my group might benefit from hearing about it.

Weisberg talked with the group about his thorough studies using his graduate students over the previous 7 years on "The Nine Dot Problem". If you haven't seen this problem, it seems almost impossible to resolve. We are presented with a 3X3 matrix of 9 dots. The problem is to touch all 9 dots with 4 straight connected lines without your pencil leaving the paper. The solution involves going outside the boundaries of the matrix (fig.1). Of course, those boundaries are imposed not by the problem, but by the problem solver. Weisberg gave his students this problem and recorded them trying to solve it. The results he reported to us transformed my understanding of the creative process. The students were unable to go outside the self-imposed matrix boundaries until they had virtually guaranteed themselves they could not solve the problem by staying inside. THEY HAD TO ACCEPT THEIR INABILITIES BEFORE THEY COULD ENHANCE THEM!

Weisberg (1988) then went on to discuss his evidentiary studies of how our great creative geniuses in the arts and sciences resolved difficult work issues, seemingly using mental processes that were similar to those experienced by his graduate students. He researched the inventions and creations of Watson and Crick (the double helix), Edison (the Kinetescope), Picasso (Guernica), Kekule (the structure of benzene), Coleridge (Kubla Khan), Darwin (the theory of evolution), and a host of other inventive giants. In each case he demonstrated the same thing. "Novel solutions to problems come about in an EVOLUTION as one gradually moves away from the conceptions with which one began. This incremental process is set in motion by feedback demonstrating the inadequacy of initial thoughts and ideas, —"Wow what an aha experience this was for me. I realized immediately what I had known intuitively all the time. Not only were the conscious brainstorming sessions I had learned about in Buffalo, and was teaching, colossally inefficient, they were not part of the natural problem solving process for me, or for other creative people.

My associate, Peter Lloyd, and I then studied Darwin's theory as expressed in his 1859 book "On the Origin of Species". Darwin (1859) proposes that all creatures adapt to an ever-changing world by a process he called "Natural Selection". As species adapt from generation to generation, nature selects those species better suited to survive than their competitors. Darwin posits a 3 phase process for evolutionary change: Extinction, Mutation, and Selection. We discovered that the human creative process actually mirrors these steps. We then set about determining how, with the use of modern technology and a number of techniques we developed, we could significantly speed this 3 step process up for groups while significantly increasing the chances that breakthrough solutions to difficult problems could be found. Though the term "Speedy Evolution" seems like an oxymoron, it lives in our system. Following is a description of the 3 phases.

1. Extinction

In our business process, Extinction translates not only into dissatisfaction, but actual mental dismissal of existing ideas and habitual pathways as remedies for a situation causing concern. We can not overstate the importance of this step. Without the recognition that the old ideas don't work, new ideas are simply not available to our psyche. Consider the following two anecdotes:

Consider what you do when you misplace your car keys:

a. You look in places you habitually leave them. When this fails you….
b. Look in the same places, but this time with more focus, intensity, and a touch of obscene epithets. When this fails you…..

c. Think about where you were prior to loosing them, and try to retrace your steps. When this fails you…..
d. Make a random search in places you would not expect to find your keys, and if you're lucky, ---Aha! You find them. Then in a flash of recognition, you remember why they were there in the first place.

The most arresting part of this search episode, is that your keys may well have been on the periphery of your vision field when you began your initial search, but because you didn't expect to find them there, YOU COULD NOT SEE THEM!

> A true story…Years ago, a friend Eliot, was a creative director at BBD&O a multinational Advertising Agency located in the U.S. Eliot was in charge of the Firestone Tire account. He has just created (in his view) one of the greatest ads he had ever developed. Four weeks before the TV shoots were to take place, Eliot received a call from the legal department. They told him he could not use the ad because a Canadian agency had just run an ad that was too similar for another tire company. Eliot was devastated. Try as he might, everything he thought of was at a best a pale comparison to his initial creation. Finally, in a fit of frustration Eliot cried out. "I'll never be able to come up with anything that good again." That night he woke up at 3:00 A.M. with the answer…Two months later, an award winning ad campaign was aired by Firestone. It depicted a Firestone engineer at an awards dinner in his honor. His boss is shown giving a talk about how great the tire is that the engineer developed. At the end of his speech, the boss turns to the engineer and says "Now go and make it better." The ad closes with a flash of the engineer's now anguished face saying "I'll never be able to come up with anything that good again."

In both of these situations, the recognition of failure created a new state of receptivity in the problem solver's mind so that unusual thoughts and new patterns increased in perceived value. The unusual held more promise because once failure was accepted, notions of relevance and irrelevance shifted. The problem solver was now "freed" of being a slave to what he had previously considered to be important. Therefore, it becomes abundantly clear why a significant part of any creative process, in part, makes the irrelevant relevant.

The challenge now became creating this recognition state in the group—comprised of both the idea people (Ideators) and the Decision Maker (DM) in a relatively short time frame (see Appendix A for roles and structures in Cruising.). To do this, we decided to shift the focus of the group from the problem to the DM's thought process. This, it seemed, would automatically change the relevance hierarchy and allow fresh approaches to carry more weight. We do this by asking the DM to make a list of all his (her) failed attempts, including things he has considered, but rejected. He then creates a summary statement looking for the "pattern of failure". It details in 1 or 2 sentences why he thinks his ideas didn't work and what they were lacking. This has now created the explicit recognition of failure, and served to shift the group focus.

Another technique we use here is to ask the DM to consider and list all of the assumptions he is making about his situation that are so basic, that he doesn't consciously consider them when thinking about his situation. We then ask the group to systematically and con-

sciously reverse them to see what fresh approaches are suggested in preparation for the 1st idea episode in the Mutation phase of Cruising (Grossman, Rogers, Moore 1988).
(One business breakthrough that our assumption reversal inspired occurred with a large polymer company in the US who manufacture Polyvinyl Chloride (PVC). We were looking for new uses when 1 person in the group suggested "plastic coffins". The amount of negativity this idea created about the merits of wood vs. plastic, and the "dignity gap" between the two convinced me the idea was worth pursuing! (See Facilitator Appendix A). So, I then asked the group to verbalize their assumption(s) about plastic coffins that were so basic they didn't even consciously consider them. The first response was "Coffins are used to bury dead people." As soon as the group heard this, someone immediately offered "Plastic Pet Coffins" for consideration. This was a wonderful idea, and this new business was created in a plant in the Northwest of the US, and currently grosses 25+ million dollars a year.)

Finally, we do all this work remotely, on a password protected web site, to allow each individual in the group to consider new perspectives at their own convenience.
At the same time we save the time and cost of getting together until we reach the Selection Phase of our process where the interaction between the Ideators and the DM needs to be more immediate and spontaneous.

Even though we are ready to leave the Extinction phase of our process, you will see that some form of extinction goes on in the entirety of the next 2 phases until the breakthrough solution (which we think is inevitable) occurs.

1 MUTATION

Having dismissed all the old ideas and patterns, what do we put in their place? And, as always, how do we do this efficiently? We know the politically correct cliché; "no idea is a bad idea" is simply not true. Just look at all the energy we spent dismissing the initial batch. Fortunately, there was a wonderful study by Gordon and Pose (1981) reported in the Journal of Creative Behavior, "Conscious/ Unconscious Interaction in a Creative Act".

It has long been reported that the macro process of creative problem solving involves 4 steps: Preparation, Incubation, Illumination, and Verification (Wallas, 1926). In Preparation, the creator gathers information and tries to resolve the problem using methods and ideas that are familiar. When these are unequal to the task, because of the problem's additional complexity, newness or unique challenges, the creator enters the Incubation phase, leaving the problem alone, and doing some other work or leisure time activity. Incubation leads to the Illumination phase in which, as if out of nowhere, the new idea "presents itself" (this can take moments up to years!). Last comes the Verification phase, where the creator shapes the new insight into final form for implementation.

Gordon and Pose (1981) asked the question, what happens at the interface between Incubation and Illumination? In other words, what is the "micro-process" of the creative act? To answer this question, a group of people were selected who shared two common characteristics: They were deemed by their peers to be creative people, and they said they had the ability to recall in detail the step-by-step mental events they went through during the Illumination process, even though it only lasted for a split second or two.

One might well question the veracity of this last claim. They might have made the sequence up after the fact as justification for their insights, rather than a factual reporting of

events that actually occurred. Nevertheless, almost all of them, in one form or another, reported the same 4-step sequence of events:

1. I get a mental picture (an internal image) that is remote from the problem domain.
2. The image becomes fuzzy and distorted. There is generally a sense of motion (as in the rapid focusing and defocusing of an overhead projector).
3. The image momentarily disappears.
4. Finally, a new image takes its place; one which is a "resonance form" of the initial image, but is now back in the problem domain, offering the seed to a wonderful solution.

This study may seem difficult to digest, but there is a self-reported experience that occurred over 100 years ago that exemplifies what these folks were describing that occurred in the field of Organic Chemistry:

Friedrich August Kekule' was a professor of chemistry at Ghent University in the 1860's. He, along with a group of world renowned associates, was working to elucidate the structure of an organic molecule which had evaded all prior attempts at resolution. Here is what he wrote about his brilliant breakthrough ".....I turned my chair to the fireplace and dozed. Again the atoms were gamboling before my eyes. My mental eye could now distinguish larger structures....longer rows twining and twisting in snake-like motion. But look! What was that? One of the snakes had seized hold of its own tail, and the form whirled mockingly before my eyes. As if by a flash of lightening I awoke; ---- and this time also I spent the rest of the night working out the consequences of the hypothesis" (Rothenberg 1979).

The snake seizing its' own tail gave Kekule' the hexagonal structure idea of benzene---perhaps one of the greatest discoveries in Organic Chemistry of the 19th century.

What a wonderful example of the Gordon and Pose' (1981) study.

So it seems if we are to speed this process by providing stimuli for idea generation to our group, we need to meet two criteria:

1. The stimuli need to evoke mental images. The more sensory information in an idea, the greater the chances internal images will result---so stimuli must be SPECIFIC.
2. The stimulus, on the surface, may be far from the problem domain, or even impossible to execute, but some characteristic of it should provide a link with a potential solution.

This 2nd criterion is automatically met in our process, because we ask the group to always consider what's wrong with the ideas from the previous step, Decision Maker Evaluation, as a motivator for their next Idea Episode.

Idea Episodes

Mutation contains 3 separate idea episodes. Each episode has two parts: a. group idea generation and b. DM idea evaluation. (Appendix 1). In the 1st part of each idea episode there is no distinction between the DM and the Ideators—they all give ideas. It's only in the 2nd part, Evaluation, that the roles are separate.

FIRST EPISODE IDEA GENERATION:

The group is asked to consider the Decision Maker's gap as articulated in the summary statement at the end of Extinction and provide 1-3 ideas. At this juncture, no additional stimuli are provided. It is expected that the group's top of mind responses should be ade-

quate for them to suggest, what they think are exciting paths to consider. Here, there are 2 criteria for submission. They should strive to give specific ideas they think will work. They are also asked to be brief and not defend or explain their choices; this is up to the DM in the Evaluation phase. Of course, if they have more than 3 ideas that satisfy these criteria, they should submit them all.

FIRST EPISODE IDEA EVALUATION:
The Decision Maker gives a 2 part response to each submitted idea. First the DM lists what he (she) likes about the idea. Secondly he talks about any problem he has with it. After he goes through each idea, he takes 3 additional steps:

He makes a general statement concerning the group of ideas as a whole (in general what they seem to be lacking). Next, he talks in more detail about his favorite idea. Finally, and most importantly, he talks about the idea he most dislikes!

In this step, as in all others, we are looking for the Decision Maker's energy. This, above all else, provides us with fuel for the next idea episode.

If the DM sees an idea that he loves, he tells the group what he needs from them to make it work. They then simply accede to his request in the next episode.

Just as importantly, if there is an idea he hates, there is an embedded wonderful solution right around the corner. His emotional response is indicative that we have touched on the Real Problem. One that has not yet surfaced. And often, in my experience as a facilitator, one form of reversal of the submitted "bad" idea has yielded a beautiful solution. The group is instructed to keep this in mind in the next idea episode.

SECOND EPISODE IDEA GENERATION:
We now provide additional stimuli for the group to consider. (See Appendix B) These suggestions purposely move the group away from the constraints of the problem domain, and merely act as provocations to shake loose new perspectives. As before, the group is asked to consider the DM's 1st episode evaluation and again submit 1-3 ideas for consideration. Here, there is a need for the group members to be more creative, as they must modify the ideas that the stimulators suggest to yield practicality.

SECOND EPISODE IDEA EVALUATION:
Here again, the DM talks about what he likes and dislikes about each new idea submission. He also tries to identify the best and worst ideas and why he feels that way. He then focuses on the approach that seems to contain the seeds for a solution, and resolves to his satisfaction, many of the initial issues. He describes in detail all of the positive attributes he sees. He also summarizes, in one or 2 sentences, what is still missing for a wonderful potential solution. However, here he takes the additional step of distilling what's missing down to 1 or at most 2 words in preparation for the 3rd and final idea episode. Hence, if what's missing is how to convince other business stakeholders to "buy on" to a novel approach his favorite idea offers, his one word might be "Support".

THIRD EPISODE IDEA GENERATION:
After reviewing the previous evaluation, the group focuses on the path the DM is suggesting, paying particular attention to the DM's one word summary; again seeking 1-3 ideas

that practically and productively respond. To help in this 3rd and (hopefully) final episode, we suggest the following stimuli:

We have the group members go to www.Gocreate.com/animal—a problem solving system using animals as stimuli designed by Grossman and Lloyd (2011). The Ideators then click on "Online Tool" where there are 3 choices. Clicking on the 2nd choice, "Animal Crackers Online Tool", they find a list of 18 words. Clicking on the word that comes closest to the DM's one word summary at the end of the last phase, they find a series of animal pictures, each with a described behavior that successfully executes that word. Then, choosing the most intriguing animal adaptation, they attempt to convert it to a great idea for the DM. To help with this metamorphosis, we suggest they use our "Search for Utility", which we think might replicate the Gordon and Pose 4 step "Imagery-Fuzzed Imagery" process (1981 Gordon & Pose). This technique is detailed in the Selection phase of Cruising, where it is used again by the DM.

THIRG EPISODE IDEA

The DM now makes his final choices describing in detail the idea(s) he has chosen for a solution, and his potential plan of implementation for each. We are now ready for the final phase of Cruising to Aha.

3 SELECTION

In this 3rd and final phase of our process, which in Natural Selection, Darwin calls "The Struggle for Existence, the DM (with the aid of the group) creates a final wonderful solution and maximizes the chance for successful implementation.

This is by far the most difficult part. We are all too familiar with the sobering consequences of "Murphy's Law".

We use a 2 part process here. In the 1st part which we call "The Search for Utility", the DM tells the group what's positive about his final choice by responding to the following 5 questions:

The Search for Utility

a. What does the idea accomplish?
b. Under what conditions might there be a maximum benefit?
c. What's different about this idea from others considered previously?
d. What specific mechanisms cause this idea to function well?
e. What general principles guide the idea's successful operation?

In the 2nd part we ask the DM to list all of the potential problems that may get in the way of successful implementation. He does this by asking the group questions that start with the words "How to-". For example, if he thinks something may cost too much, he says "How to do this more cheaply?" or How to make the idea more cost effective? The group members now help once more by generating ideas that fill the remaining gaps while maintaining the spirit of the DM's choice.

Perhaps any creative process, including Cruising to Aha, is summed up most elegantly by the great French poet Paul Valery who said "It takes two to invent anything. The one makes up combinations; the other one chooses, recognizing what he wishes and what is important to him in the mass of things which the former has imparted to him. What we call

genius is much less the work of the first one than the readiness of the second one to grasp what has been laid before him and to choose it!"

Appendix A

Roles, Structures and the Flow of Events

1.Roles and Responsibilities—There are three roles in our groups: Decision Maker, Ideators (Idea Generators) and Facilitator.

Decision Maker The decision maker (DM) is the owner of the problem. Generally, it is this person who has the most personal stake in a successful outcome. As such he(she) has 2 responsibilities. The first is to provide information to the group and subsequently answer additional questions the group members may have in the Extinction Phase. Secondly, the DM is the evaluator of all the ideas the group generates in the last 2 phases (Mutation and Selection).

Ideator The Ideator's main responsibility is to provide great ideas to the DM. The Ideator also makes sure he understands the issues; he does this by asking open ended questions, mostly in the Extinction portion.

Facilitator The facilitator's responsibility is to manage the total process, and insure the ideators have what they need to generate great ideas for the DM. This involves maintaining lines of open communication among all parties, insuring each understands the other's point of view. He must especially pay attention to the energy of the DM and the group. Energy, both negative and positive, has the seeds of a breakthrough solution, and the group needs to pay special attention to it.

General principle of interaction: This process works best when there is a power sharing mentality. The more value the DM is able to find in the Ideator's suggestions, the harder the Ideators will work to generate ideas that the DM can use. The facilitator works with the DM to maintain this balance.

Most Important Ground Rule

The group is told to never let any instructions or protocols inhibit their ability to generate a great idea, or get in the way of their personal creative process. If they experience this, they contact the facilitator who will make every effort to accommodate them.

The Process

1. Extinction

The DM records a general overview of the situation causing concern.
He then details all the ideas he has attempted or consciously considered, and why he thinks they didn't work. The Ideators then ask open ended questions to help them prepare for the

Mutation phase of the groups work. The DM then responds to these until everyone feels they are up to speed'.

All this is done on a password protected web site, so the group's physical presence is not required.

2. Mutation

There are 3 episodes. Each episode contains 2 parts, Idea Generation, and Idea Evaluation. These are described in detail in the body of the chapter. In the Idea Generation portion, everyone can be an Ideator, even the facilitator (See Ground rule).

In the Evaluation phase, the group resumes the 3 role structure, with the facilitator attempting to insure that all ideas are fully understood by the DM. Here, the Ideators, are again, not present. Again all ideas and succeeding correspondence are recorded on the web site.

3. Selection

This proceeds as detailed in the text, however everyone's physical presence is preferred. This should be relatively short in duration (1-3 hours at most). Again everything is recorded.

Appendix B

Suggestions for Idea Generators in 2nd Episode of Mutation

Make something larger, extend it, increase its value.
Make something smaller, compress 2 functions into 1, miniaturize a component.
Reverse a basic assumption, change a path, rearrange a design, substitute an alternate.
Assume you have some superpower –strength, speed, intuition.
Change a natural law—suspend gravity, reverse time, create energy.
Eliminate a constraint—money, time, technology.
What would your child suggest?
Look for the worst possible idea—and reverse it.
Use something found in a park.
Involve an additional sense---smell, sound, touch.
Have a private conversation with your living or dead creative hero—what would they suggest.

Generate an idea(s) with a FATAL FLAW

a. It costs too much
b. It takes too much time
c. It is illegal
d. It puts the user at risk
e. It gives away a trade secret
f. It leads to undesirable clients
g. It gives mixed signals
h. It is addictive
i. It is culturally taboo

j. It requires too much user effort
k. It has an inappropriate dimension.

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Author's Brief Bio

Stephen R. Grossman is, by background, a paper and fiber physicist, inventor, author, and internationally known consultant in creative thinking. Grossman holds a number of US and European patents (including one for Cottonelle Bathroom Tissue), and 3 industry wide technical awards for creative performance as head of Basic Research in New Product Development for the Scott Paper Company. Subsequently, Grossman has co-authored two books and 40+ articles on creative thinking, including 3 lead articles in the Journal of Creative Behavior. His 1994 article in JCB (Grossman, S.R. 1994, Vol.28, 4th quarter, Transcendence as a subset of evolutionary thinking.) provided a backdrop for his new process "Cruising to Aha". His 1st book, Innovation, Inc. (1988), sold over 20,000 copies and is published in English, Spanish, and Hebrew. It has been used extensively by corporations in the US and Mexico, as well as The Institute for the Development of Thinking in Jerusalem, Israel. Aside from a host of multi-national corporations, Grossman has done extensive consulting interventions with NASA Goddard space Flight Center. He was the keynote speaker at the 4th International Symposium on Innovation in Quebec City.

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4 DON AMBROSE

INVIGORATING INNOVATION AND COMBATING DOGMATISM THROUGH CREATIVE, METAPHORICAL BUSINESS LEADERSHIP

ABSTRACT The influence of metaphor on human thought and action is ubiquitous and powerful. At the deepest levels of cognition four root metaphors compete for our attention and trap us in dogmatic, insular perspectives. Understanding these four metaphorical worldviews can expand the vision of organizational leaders and their colleagues, freeing them from implicit thought imprisonment and enabling them to perceive new opportunities. Each of the worldviews encourages a unique perspective on barriers and opportunities confronted by enterprises. The mechanistic worldview encourages us to view people and processes in organizations as machinelike, magnifying the importance of precision, detail, reductive thinking, and objectivity. Based on the metaphor of an intricately integrated organism, the organicist worldview emphasizes the coherence and totality of systems, with the whole transcending the parts. It magnifies the importance of integrative connections and long-term, holistic developmental processes. Based on the metaphor of an ongoing event within its context, the contextualist worldview highlights the importance of contextual influences and the unpredictable emergence of novelty. Finally, based on metaphorical similarities, the formist worldview encourages us to seek patterns of similarity in diverse phenomena. With appreciation for the ways in which each worldview provides a unique perspective on an enterprise and its market niches, organizational leaders can avoid narrow-minded, dogmatic entrapment within a single perspective, thereby strengthening their chances for dynamic innovation.

Invigorating Innovation and Combating Dogmatism Through Creative, Metaphorical Business Leadership

Creativity in business and organizational leadership is drawing attention, especially in today's complex, unpredictable, globalized environment (see Mumford, 2011; Runco & Kim, 2013). While market niches can be found within isolated, local contexts, most organizations are influenced by rapidly shifting opportunities and problems within intricately interconnected transnational communication networks (Rodrik, 2007). This magnifies the importance of creativity. The creative minds of leaders and employees represent the new capital of the 21st century.

In such conditions one of the biggest threats to organizational survival is the possibility of implicit mind entrapment within a conceptual framework that limits or distorts creative thinking. Stempfle (2011) used the term *organizational fixation* to represent this problem

and to show how habit-bound thinking can limit the capacity for organizational change. A primary responsibility of organizational leaders is to recognize and overcome organizational fixation to prevent it from becoming an excessive threat that hides problems and obscures opportunities for productive innovation.

Dogmatism Eroding Our Cognition and Causing Immense Damage

Organizational fixation is one aspect of a larger problem that has plagued the human mind from the first glimmers of cognition in the ancient past. Dogmatism might be the most powerful and difficult enemy of creative thought (see Ambrose & Sternberg, 2012). A dogmatic mind is plagued by some combination of narrow-mindedness, shortsightedness, and superficial thinking. It is trapped implicitly within a particular conceptual framework such as a cultural or ideological belief system, a research paradigm, or a favored problem-solving methodology. Examples of the enormous harm dogmatism causes are ubiquitous. Here are a few:

- War is a crapshoot with the dice loaded heavily against the "player." History unfortunately repeats over and over again when the excessive optimism of dogmatic policymakers and military leaders forces nations into costly, unpredictable military incursions (Bacevich, 2005, 2012).
- Genocide occurs when the dogmatic minds of societal leaders are trapped within any of four causal notions: (a) fear of pollution from another "impure" population; (b) favoring preemptive attacks due to irrational fear of attacks from outsiders; (c) revenge for past transgressions that might be decades or even centuries old; and (d) the convenience of capturing resources owned by outsiders (Chirot, 2012; Chirot & McCauley, 2006).
- Those who cling dogmatically to insular notions of identity formation tend to see outsiders as less worthy, even less human than those within their own cultural, ethnic, or religious group (Gewirth, 1998; Monroe, 2004, 2011).

Metaphorical Dogmatism

These examples exert most of their impact within the sociopolitical and cultural dimensions of our lives. But there are forms of dogmatism that have more impact on creative business and organizational dynamics. One especially powerful and little recognized form of dogmatism comes from implicit entrapment within metaphors. It sounds incongruous to think of metaphor is having much impact beyond the high school English classroom; however, researchers and theorists in linguistics, philosophy, cognitive science, and creative studies have revealed the potential it has for powerful, implicit influence in a wide variety of human experiences.

Lakoff and Johnson (Lakoff, 1993; Lakoff & Johnson, 1980, 1999) revealed some ways in which metaphor implicitly shapes our thinking. For example, we tend to think of theories as buildings when we talk about "shaky or solid arguments," or "theoretical foundations and frameworks." Our conceptions of the human mind are shaped metaphorically as well. For example, when we say "I'm a little rusty," or "the wheels are turning," or "we are grinding out a solution," we are reinforcing the notion that the brain-mind system is a

machine. The brain-mind may operate somewhat like a machine but it is not very machine-like. Nevertheless, these mechanical metaphors can incline us to think about our minds in excessively mechanical ways.

This became particularly evident when two prominent cognitive scientists disagreed over a metaphor. Marvin Minsky, a pioneer of cognitive science, once made the comment that "the brain is a meat machine" (paraphrased in Clark, 2001, p. 7). This prompted another leading cognitive scientist, Joseph Weizenbaum (1995), to wrangle with Minsky's comment, arguing that Minsky had ignored contextual influences on the mind while demeaning humanity with the metaphor because meat is dead and can be burned and eaten. Weizenbaum was concerned that the meat machine metaphor exerted downward pressure on the value of human life and expectations for ethical behavior because it encouraged us to conceive of ourselves as nothing more than chunks of meat.

Metaphorical Worldviews

These examples just scratch the surface of the literature on the impact of metaphor on thought but they provide some sense of the ways in which our minds can fall into metaphorical traps. Long ago, Stephen Pepper (1942), a leading philosopher, determined that four world hypotheses vie for attention at the implicit level in our minds. He named these four world hypotheses *mechanism, organicism, contextualism,* and *formism.* According to Pepper, these world hypotheses are metaphorical windows through which we view the world. Each one provides a different perspective on phenomena and they are incommensurable with one another, which means that each perspective is unique. It is extremely difficult to view the world simultaneously through more than one of these metaphorical windows.

These world hypotheses later became known as *worldviews,* which were used to analyze phenomena in cognitive science (Gillespie, 1992) and creative studies (Ambrose, 1996, 2009), among other fields. Each worldview has a "root metaphor" that structures the thinking of the person who is trapped within the framework. Each root metaphor encourages the thinker to perceive phenomena through the lenses of particular tenets.

For example, the mechanistic worldview is based on the root metaphor of a machine. This means a thinker trapped within mechanism tends to see the world as machinelike. The basic tenets of the mechanistic worldview include reduction of the whole to its component parts, strivings for precision and detail in one's work and thought, the search for causal mechanisms that shape phenomena and events, and the valuing of objectivity in investigation. An example of the influence of mechanism is the reduction of the complexities of human intelligence to a precisely measurable IQ score.

In stark contrast, someone trapped within the organicist worldview is guided by the root metaphor of an organism developing through stages toward a particular end. The basic tenets of organicist thought include a strong focus on the coherence and totality of systems with the whole transcending its parts, the importance of integrative connections, and attention to long-term developmental processes. An example of the influence of organicism is the attention to the "whole child" by educators who follow constructivist philosophy (see Duckworth, 1987; Popkewitz, 1998). Instead of emphasizing just the development of cognition (acquisition of factual knowledge and skills) the constructivist educator integrates cognition with the emotional dimensions and physical experiences of learning. The integration of knowledge through interdisciplinary work is another example of organicist thought (see Ambrose, 2009).

The contextualist worldview is based on the root metaphor of an ongoing event within its context. Its basic tenets include a penchant for going beyond the particularities of the phenomenon under study to look carefully at contextual influences on that phenomenon. Another tenet is attention to the unpredictable emergence of novelty in the ongoing event of interest. An example of contextualist influence is the emergence of cognitive scientists who study the context-embedded mind (e.g., Descombes, 2001; Gillespie, 1992). They go beyond the emphases on brain structures and electrochemical processes in neural networks, which are favored by mechanistic cognitive scientists, to see how cultural influences and other external pressures shape cognition in emergent, novel ways.

Finally, the formist worldview is based on the root metaphor of similarity. Its basic tenets include a search for patterns of similarity in diverse phenomena. Real-world examples of formist thinking include complexity theorists who study patterns of similarity in the dynamics of complex, adaptive systems such as human brains, national economic systems, populations of animals in ecosystems, and intriguing similarities at different levels of scale in fractal mathematics (see Lineweaver, Davies, & Ruse, 2013; Miller & Page, 2007; Page, 2010; Porter & Derry, 2012; Richards, 2001, 2010; Schuldberg, 1999).

Pepper (1942), who initiated the notion of root metaphors, and those who have followed with studies of worldview influence in various disciplines, point out that none of these worldviews are right or wrong in and of themselves. They provide unique perspectives on phenomena but those perspectives are incomplete. To gain a comprehensive understanding of complex phenomena one must employ multiple worldview perspectives. Given the incommensurability of worldviews, gaining multiple perspectives by looking at a phenomenon through multiple worldview lenses is not easy. Nevertheless, it is worth attempting because each worldview by itself gives an inadequate portrayal of the phenomenon.

For example, some excessively mechanistic theories have dominated in some fields and this has led to mixed results. Behaviorist psychology in the mid-20th century portrayed the human mind as exceedingly machinelike and this led to excessively manipulative behavioral interventions based on reward and punishment. The long-term, intrinsic motivation that would be available through organicist perspectives on psychology were marginalized. As a result, psychology made progress but down an increasingly barren, hyper-mechanistic path (Ambrose, 2009). Similarly, the rational actor model that has dominated neoclassical economics portrays the human as an exceedingly rational being who makes logical, self-interested choices based on complete information sets. While this model led to empirical progress in the field it didn't map onto reality very well because humans are much less rational than the model allows (Stiglitz, Sen, & Fitoussi, 2010).

In essence, any field or collection of professionals striving to understand complex phenomena would do well to look through these multiple worldview windows from time to time. This advice applies to business leaders just as it does to cognitive scientists, psychologists, economists, philosophers, and educators.

Looking for Creative Business Opportunities Through Four Worldview Windows

Organizational leaders who want to inject creativity into their systems must consider the intricate, multiple dimensions of those systems. They must think about the products and

services that are at the core of their mission; the ever-evolving market niches that largely determine the level of success the organization will enjoy; the managerial structure of the organization; the aspirations, talents, and motivation of employees; the relevant communication networks within and beyond the organization; the evolving nature and initiatives of competitors; and more. In addition, as mentioned earlier, the rapid evolution of markets and communication in the 21st-century globalized environment adds much more complexity to the work of leaders and employees. Bearing in mind this heavy load, expecting them to consider all of these dimensions of the enterprise through multiple worldview lenses seems to be somewhat unreasonable; however, entrapment within a single worldview can lock an organization within a dogmatic approach and set it on a path toward its own destruction. Consequently, to the extent it is possible to provide multiple worldview perspectives on organizational processes and structures it is well worth doing so.

There is another, related reason for employing these diverse perspectives on the organization and its contexts. Page (2007), an economist and complexity theorist, reported the results of large-scale analyses of group problem-solving outcomes in a wide variety of organizations. The analyses revealed that a cognitively diverse team provides significant advantages over a homogenous team when it comes to solving complex problems. The members of a cognitively diverse team bring together diverse theories, and/or problem-solving heuristics, and or belief systems. In contrast, a homogenous problem-solving team tends to automatically follow the tenets of a single, dominant theory, and/or a favored problem-solving method, and/or a single, dominant cultural or philosophical belief system. Even if a homogenous team is somewhat superior to a diverse team in measured intelligence the diverse team likely will generate superior performance. Interestingly, cognitive diversity turns into a disadvantage when teams deal with simple, algorithmic problems.

Given the complexity of the problems that organizations must deal with in the 21st-century it makes sense that cognitive diversity is becoming more of an advantage in team problem solving. Also, given that the root metaphors that frame thinking within each worldview represent differing belief systems and theoretical perspectives, and the basic tenets of each worldview include guidelines for research and problem solving, a team made up of individuals who bring differing worldview perspectives together into a common forum will be cognitively diverse. So what would organizational leaders and employees who align their minds with particular worldview frameworks bring to a business or enterprise? Table 1 shows the four worldviews, the root metaphors that frame thinking within each worldview perspective, and the basic tenets of each prospective. The right-hand column includes some examples of ways in which each worldview can bring differing influences to bear on the structure and dynamics of organizations and enterprises. These examples are elaborated in the following subsections.

Mechanistic Influences

Mechanistic individuals or groups will focus on reduction, prediction, control, and objectivity because they will view the organization as machinelike. They will assume that work processes can be measured and guided with precision because employees are viewed as cogs comprising components within larger mechanisms. Taylor's (1911) scientific management was an early example of strong mechanistic influence and it still shapes many of the structures and processes within a large number of organizations. Taylor's highly mechanis-

tic time-motion microanalyses of industrial processes produced very specific guidelines for the reorganization of work. Scientific management contributed to the development of Fordism—the highly mechanized, mass production manufacturing processes Henry Ford developed in the early 20th century. The standardized mass production of Fordism made mass production highly profitable because tightly disciplined labor engaged in repetitive, simple processes driven by the speed of assembly line machines (Rupert, 1995).

But mechanistic processes were not confined to the early part of the last century. They have a place in 21st century work processes as well. For example, the rapidly emerging industries revolving around biotechnology and nanotechnology require at least some degree of exquisite reduction, prediction, and control (Carlson, 2010; Interrante & Chandross, 2014; Rose, 2006). The major difference between the early 21st century and early 20th is that successful enterprises will require high levels of creativity from everyone, not just from those in the executive offices.

An enterprise that includes mechanistic perspectives will benefit from order, predictability, precision, and efficiency and there is room for creativity in the refinement of the mechanical aspects of the system, especially when it comes to the invention of new mechanistic procedures and structures. However, if the thought processes of the system are confined excessively to the mechanistic worldview, creativity will suffer. Work processes may be driven somewhat by the tenets of mechanism but the other worldviews also must contribute. The minds of employees must include the higher-level thought processing that comes from organicist connection making, contextualist novelty generation, and formist pattern finding.

Organicist Influences

If an organization includes organicist thinkers when it hires employees and executives it will benefit from holistic thinking that breaks down silos and establishes creative connections. There also will be more of an emphasis on the long-term development of the enterprise, as opposed to excessively mechanical achievement of short-term goals driven by quarterly reports.

Organicist thinkers will encourage the establishment and integration of creatively productive social networks that will sprout, grow, and bloom around promising ideas for new processes and products. For example, Baer (2010) and von Held (2012) found that effective networking through strong relationship building improved the chances of creative ideas being accepted and implemented in organizations. Mathisen (2011) discerned that collegial support for creativity contributed to feelings of creative self-efficacy and work performance. Collegial support is a spinoff benefit of organicist networking. Murray (2013) argued that virtual networks are growing in importance and will change organizational dynamics. In other words, networking technology could magnify and refine the nature of organicist influence on organizational creativity.

Organicist thinkers will attend to the long-term development of new knowledge and relevant skills that are important to the enduring sustainability of the system (for example, see Gilley, Shelton, & Gilley, 2011). The interpersonal and emotional dimensions of work processes will be important considerations because team building will be viewed as an important dimension of the creative work of the enterprise. For example, Barczak, Lassk, and Mulki (2010) argued that healthy emotional intelligence in teams builds trust that strengthens the culture of creative collaboration.

Given the holistic emphasis of the organicist worldview, at least some of the attention given to team building will revolve around the establishment of interdisciplinary integration. For example, enterprises that involve scientific knowledge and skill must get beyond notions of reliance on the atomistic, lone scientific genius (a reductive, mechanistic conception). Instead, they should heed advice given by Subra Suresh (2013, October), former director of the National Science Foundation and current chair of the Global Research Council. Suresh argued that transdisciplinary, international collaboration among scientists is becoming the norm in scientific work because innovation flourishes when research teams make room for the integration of diverse ideas and perspectives. Organizations that want to thrive in the 21st century can give themselves better opportunities to do so if they include the holistic, integrative mindset of organicist thinkers.

An organization that makes sufficient room for the organicist worldview has a chance to approximate the best characteristics of the high-performing creative individual as portrayed by the pioneering developmental psychologist and creativity researcher Howard Gruber. According to Gruber, such an individual develops a *network of enterprises,* which is a collection of diverse but productively integrated projects that feed into and inspire creative growth in one another (see Gruber, 1989, 1999). Some of these projects will truncate or die on the vine while others will thrive and grow into long-term, purposeful initiatives. The long-term development of creative work is guided by a sense of purposeful direction, metaphorically conceived as an inner gyrocompass. But that purposeful direction makes room for deviation from the long-range trajectory when there are opportunities that are worth pursuing. The entire creative system of the impressive creative individual is fueled by relevant knowledge, affect, and, of course, the evolving, strengthening sense of purpose. An organization that collectively embodies these traits of a highly creative individual will give itself significant long-range advantages when it comes to innovation.

Nevertheless as with any of the worldviews there can be too much of a good thing. An organization that becomes excessively organicist can find itself too bound up in group dynamics, even groupthink, and may forget to ensure that processes and products include the precision of mechanism, the novelty of contextualism, and the pattern discovery of formism.

Contextual Influences

An organization that includes contextualist leaders and employees will strengthen its context sensitivity and its ability to recognize and capitalize on the unpredictable emergence of novelty. Context sensitivity includes the ability to understand the nature and dynamics of market niches and competitors as well as the cultural contexts of the society in which the organization is embedded. Possibilities for contextual awareness come from studies of cultural influences on creativity. For example, Lan and Kaufman (2012) discovered interesting differences between the ways in which Americans and Chinese perceive creative novelty. Americans tend to appreciate groundbreaking novelty while the Chinese incorporate more traditional ideas into their conceptions of creativity. They tend to favor creativity within the constraints of tradition.

This interesting cultural difference connects with another concept related to contextualism. The interdisciplinary field of complexity theory includes analyses of the chaos-order hypothesis, which portrays the behavior of complex adaptive systems as navigating along a

continuum from chaos to order with a complexity generating space in the middle (Ambrose, in press; Kauffman, 1995; Langton, 1990; Packard, 1988). Complex adaptive systems are ubiquitous. Examples include chemical solutions, animal populations and ecosystems, traffic patterns in cities, the mind of a creative individual, and the collective minds of creative teams in organizations.

Excessive chaos arises when there is too much turbulence in a complex adaptive system so elaborate, creative complexity cannot emerge. Excessive order locks complex adaptive systems into a rigid pattern that also does not allow for the emergence of creative complexity. Looking at the Lan and Kaufman (2012) analysis through the lens of complexity theory reveals that Americans tend to locate themselves a little toward the chaos side of the middle of the continuum because they are less bound by the order of tradition whereas the Chinese locate themselves a little toward the order side of the middle due to the order provided by tradition. Complexity rises dramatically when one finds the middle of the continuum where an exquisite balance between order and chaos is achieved at the edge of chaos. Adding nuance to the model, the edge of chaos is a shimmering, shifting point on the continuum that moves a little toward chaos or order depending on contextual conditions and the shifting nature of a complex adaptive system itself.

Part of this shifting nature of a complex adaptive organization is its working atmosphere, which includes the organizational climate for creative thinking and innovation. Leadership support is an important element of a creative organizational climate (Isaksen & Akkermans, 2011). Recognition that leaders cannot predict and control everything in a mechanistic way is an important dimension of an organization's creative climate. For example, nonlinear management theories encourage leaders and personnel to back away from conceptions of excessive control to make room for the unpredictable emergence of novelty (Pellissier, 2011).

Another aspect of organizational creativity that fits on the chaos-order continuum is the increasing recognition of the decision-making nuances required by the dynamics of constraints on creativity. Deviating from the notion that creativity requires unrestrained freedom, some creativity researchers have recognized that constraints imposed by processes, structures, and contexts can both inhibit and strengthen creative work (e.g., Haught & Johnson-Laird, 2003; Rosso, 2014). According to Rosso, work teams that are able to embrace constraints as opportunities as opposed to insurmountable barriers will be able to use the pressures of those constraints to their creative advantage.

Formist Influences

Formist thinkers can contribute some useful creative thought processes to the creation and refinement of products, processes, and organizational structures. They are inclined to seek out patterns of similarity when they simultaneously consider diverse ideas. One way they can do this is through the creative use of metaphor. As mentioned earlier, metaphor is fundamental to cognition, especially to creative thought. Organizational leadership is particularly conducive to creative, metaphorical insight. Leaders who can use metaphor artfully and creatively to inspire the members of an organization to think beyond the orthodoxy can be very good at shifting enterprises in productive new directions (Nguyen & Umemoto, 2012). Martin Luther King's powerful metaphors such as "I've been to the mountaintop

and I've seen the promised land" were particularly inspiring examples of metaphorical leadership.

For organizations operating in the STEM fields, there is another highly creative use for pattern-finding metaphor. According to analysts of scientific thought processes, metaphor is a highly creative conceptual tool that allows scientists to build bridges from the known to the unknown. It enables them to develop productive theories that lead to scientific progress (Arecchi, 1996; Feist, 2006; Gruber, 1974; Gruber & Wallace, 2001; Hallyn, 2000; Harmon, 1994; Holton, 1996; Larson, 2014). Metaphors can trap minds in singular ways of viewing the world but they also can serve as catalysts for insight generation and creative pattern perception.

Formist pattern perception also is evident in the processes of creative association, which entail the smacking together of remotely associated concepts to generate creative mind sparks, as in the collision of flint and steel (Koestler, 1964; Mednick, 1962, 1976). Creative association works when the mind perceives a similarity in two concepts that normally reside separately, far apart in the mind. For example, assume that you are having difficulty with grease spots on your driveway. You mull over the annoying problem while mowing your lawn. Suddenly, you see a push broom leaning up against the garage door. A creative association mind spark fuses the concept of the bristles from the broom with the blade of your mower. You envision taking off the blade, replacing it with a bristled circular brush pad, removing the wheels, and setting the mower down on your driveway. You imagine tossing some soapsuds and water onto the driveway, starting the mower, and driving it around on the cement, rapidly washing away the grease spots. Of course, the idea isn't perfect and will need refinement but it's a creative idea nonetheless. Similar formist insights can be generated by creatively connecting processes, products, organizational structures with random, remotely associated concepts. Most of these connections will be unproductive but a few might lead to highly innovative ideas. If you have formist thinkers in your midst you magnify your chances of success.

Concluding Thoughts

Creativity in business can be elusive but is well worth pursuing. Productive, creative thinking can enable organizations and enterprises to come up with new products, services, processes, and organizational structures. It also can provide the tools necessary for breaking free from entrapment within dogmatic belief systems and habit-bound thinking. Access to creative ideas and freedom from dogmatism are more accessible if we recognize some of the ways in which our thought is framed implicitly. Perceiving the power of metaphor on thought is a particularly effective form of such recognition. Understanding and capitalizing on the root-metaphorical worldviews can generate highly productive thinking while providing a useful conceptual framework for establishing cognitive diversity in the workforce of an organization.

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Author's Brief Bio

Don Ambrose is professor of graduate studies at Rider University Lawrenceville, New Jersey, USA, editor of the *Roeper Review,* and past chair of the Conceptual Foundations Division of the National Association for Gifted Children. He serves on the editorial boards of most of the major journals in the field of gifted studies and for several book series. Don has initiated and led numerous interdisciplinary scholarly projects involving eminent researchers and theorists from gifted studies, creative studies, cognitive science, ethical philosophy, psychology, political science, economics, law, history, sociology, education, and critical thinking. Most of his scholarship entails theoretical syntheses and philosophical analyses based on a wide-ranging, interdisciplinary search for theories, philosophical perspectives, and research findings that challenge, refine, and expand thinking about the development of creative intelligence. Some of his books include *How Dogmatic Beliefs Harm Creativity and Higher-Level Thinking* (Routledge, with Robert J. Sternberg); *Confronting Dogmatism in Gifted Education* (Routledge, with Robert J. Sternberg and Bharath Sriraman); *Expanding Visions of Creative Intelligence: An Interdisciplinary Exploration* (Hampton Press); *Morality, Ethics, and Gifted Minds* (Springer Science, with Tracy L. Cross); *Creative Intelligence: Toward Theoretic Integration* (Hampton Press; with LeoNora M. Cohen and Abraham J. Tannenbaum); *Imagitronics* (Zephyr Press); *A critique of creativity and complexity: Deconstructing clichés* (Sense, with Bharath Sriraman and Kathleen Pierce), and *The Roeper School: A model for holistic development of high ability* (Sense, with Bharath Sriraman & Tracy L. Cross). Venues for some of his recent and forthcoming keynote presentations include Dubai, United Arab Emirates; Istanbul, Turkey; Ulm, Germany; Winnipeg, Canada; Jerusalem, Israel; and Kraków, Poland.

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World View	Root Metaphor	Basic Tenets (what the world view emphasizes)	Examples of Influence in Business and Organizational Structure and Dynamics
Mechanism	Machine	Reduction of the whole to its component parts; precision; detail; linear causality; objectivity	The precision and predictability of scientific management; attending to the important technicalities of process and product innovations
Organicism	Organism developing through stages toward a particular end	Coherence and totality of systems (the whole transcending its parts); integrative connections; long-term development	Integrating systems and departments; interdisciplinary work; teambuilding; establishing long-range vision
Contextualism	Ongoing event within its context	Contextual influences; unpredictable emergence of novelty	Establishing sensitivity to the cultural context surrounding the organization; organizational climate as creative opportunity or barrier; sensitivity to unpredictable creative sparks; finding creative opportunities between stultifying order and frenzied chaos
Formism	Ubiquitous similarity (e.g., Plato's ideal forms)	Search for patterns of similarity in diverse phenomena	Motivational metaphors used as leadership tools; using the process of creative association to generate creative processes, products, and organizational structures

Table 1. Root-metaphorical world views as alternative perspectives on phenomena in business.

5 KUAN CHEN TSAI

A REVIEW OF CREATIVITY IN ENTREPRENEURSHIP LITERATURE

ABSTRACT The linkage between entrepreneurship and creativity has been discussed extensively in the literature. Though various relationships between entrepreneurship and creativity have been asserted in the literature, it remains to be seen to what extent this relationship actually exists. Therefore, the main purpose of this study is to identify the role of creativity in the entrepreneurship literature. After reviewing 79 articles, three broad themes surfaced in the literature: personality and motivation, education and training, and globalization and the economy. The implication of this study is that entrepreneurship education is a promising industry for the future, to which more funding, research, and resources should be allocated as the role of the entrepreneur becomes ever more significant in society. Hopefully, this review will also provide a useful reference-point for future researchers seeking to uncover other possible research avenues, as well as inspire educators and entrepreneurs to make more productive use of their creative toolboxes.

Introduction

The linkage between entrepreneurship and creativity has been discussed extensively in the literature (DiPietro, 2003; Farahmand, Tagizadeh, & Kheirandish, 2011). Farzaneh et al. (2010) state that "creativity and innovation are considered to be inseparable from entrepreneurship, which is in turn manifested in the act of starting up and running an enterprise" (p. 5372). This is echoed by Miranda, Aranha, and Zardo's (2009) declaration that "creativity is at the heart of an entrepreneur's search for meaning" (p. 523). Given this attitude among scholars of entrepreneurship, creativity tends to be viewed as either an implicit or an explicit attribute by which entrepreneurship can be defined. For example, Bruyat and Julien (2001) note that "entrepreneurship is concerned first and foremost with a process of change, emergence and creation: creation of new value, but also, and at the same time, change and creation for the individual" (p. 173). Carland, Carland, and Hoy (1989) define entrepreneurship as "a role that individuals undertake to create organizations" (p. 64). Kao (1993) believes that "entrepreneurship is the process of doing something new and something different for the purpose of creating wealth for the individual and adding value to society" (p. 69). Shane and Venkataraman (2000) attempt to provide a definition of the full entrepreneurship cycle, and argue that the field of entrepreneurship consists of "the study of sources of opportunities; the processes of discovery, evaluation, and exploitation of opportunities; and the set of individuals who discover, evaluate, and exploit them" (p. 218). While the above-named scholars have embraced the idea of creativity as blending into the

perspective of entrepreneurship or even defining it, several others (e.g., Fontela, Guzmán, Pérez, & Santos, 2006; Rennie, 2008) go even further in equating entrepreneurial behavior to creativity. They assert that entrepreneurship is a creative action. Following this line of argument, some authors propose the notion of *creative entrepreneurship* (De Miranda, Aranha, & Zardo, 2009) or *entrepreneurial creativity* (Penaluna, Coates, & Penaluna, 2010). In creative entrepreneurship—as described for example by De Miranda et al's (2009) triple helix model—creativity is viewed as the cornerstone for innovation and entrepreneurial activity. They identify three building blocks (people, environment, and culture) as key elements for creative entrepreneurship, and argue that a creative entrepreneur should possess four characteristics: vision, difficulty in valuing the intangible, relation of intensity and emotion to the soul of the business, and connecting creation and innovation (for a detailed discussion see pp. 527-531). Entrepreneurial creativity, meanwhile, as defined by Amabile (1997), is "the generation and implementation of novel appropriate ideas to establish a new venture" (p. 20). For Amabile, motivation is the driving force for the actualization of entrepreneurial vision. As a consequence, she proposes three aspects of motivation that affect entrepreneurial creativity: intrinsic, controlled extrinsic, and synergistic (informational or enabling) extrinsic motivation.

Though various relationships between entrepreneurship and creativity have been asserted in the literature, it remains to be seen to what extent this relationship actually exists. In statistical terms, the magnitude of this connection in the literature needs further clarification. Therefore, the main purpose of this study is to identify the role of creativity in the entrepreneurship literature. Hopefully, this review will also provide a useful reference-point for future researchers seeking to uncover other possible research avenues, as well as inspire educators and entrepreneurs to make more productive use of their creative toolboxes.

Method

Literature Search

To cover the entrepreneurship literature on creativity as exhaustively as possible, several different search strategies were used. First, the *ABI/Inform Complete*, EBSCO*host*, and *ProQuest Dissertation & Theses* databases were searched to identify studies on the relationship between entrepreneurship and creativity. In addition, searches were carried out within a number of top-tier journals including *Academy of Management Journal*, *Journal of Applied Psychology, Journal of Organizational Behavior*, *Leadership Quarterly*, and *Organizational Behavior and Human Decision Processes*. Several keywords were used to this search, including *entrepreneurship, entrepreneur, creativity, and innovation*, while the dates of publication were limited to 1990 to 2012. A preliminary database of 222 articles was established for further inspection.

To further the goal of the current study, the following inclusion criteria were developed. The abstract was first reviewed. Studies were included if they dealt fundamentally with the relationship between entrepreneurship and creativity. If an article mainly addressed entrepreneurship or related issues, but did not incorporate creativity into its analysis, it was excluded—for instance, when the idea of creativity was raised only in the discussion or conclusion section (e.g., Pruett, Shinnar, Toney, Llopis, & Fox, 2009). Addition-

ally, if the focus of an article was not on entrepreneurship but on creativity, it was not considered for further analysis. For example, some authors (e.g., Sullivan & Ford, 2010) used creativity assessment in their research and the idea of entrepreneurship was one of the components of the instrument, but their overall purpose did not relate to the goal of the current study. After we applied these decision rules, the final database consisted of 79 articles for further analysis.

Coding of Studies

After all relevant journal articles were selected, each was coded as follows: (a) author, (b) date of publication, (c) published information, (d) abstract, (e) methodology, and (f) key words provided by the author(s). All of the coding was first keyed in Microsoft Excel and then transformed to HyerRESEARCH 3.5 (2013) for further data analysis. A qualitative content analysis of this dataset was used to investigate possible themes.

Inspired by McNaught and Lam's (2010) use of word clouds to generate a preliminary analysis of qualitative data visually, the abstracts of all 79 articles were run through the online Wrodle system (http://www.wordle.net). In the word-cloud methods, each word is treated as a unit of the analysis and then is assessed for its frequency in the text.

Results

Figure 1 illustrates this brief glimpse of the data, and reveals some meaningful keywords: *entrepreneurship, entrepreneurial, entrepreneurs, creativity, innovation, business, education, opportunity, training, learning, and performance*. These keywords can be further divided into two distinct but interrelated dimensions: (a) entrepreneurship and business development, and (b) creativity and innovation.

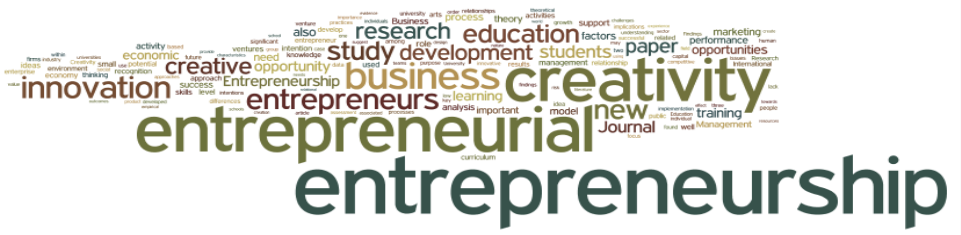

Figure 1: Wordle word clouds generated from our raw data.

In order to understand some important features of the literature, three variables were selected for further analysis. As Table 1 indicates, during the 22-year period covered by the examined literature, the great majority of studies took place in the 2000-2012 (94%). Over the same 22-year period, the idea of entrepreneurship has also broadened and become integrated into other fields. Scholars have coined a variety of terms reflective of this

phenomenon, such as cultural entrepreneurship (Hjorth, 2011), social entrepreneurship (Bradley, McMullen, Artz, & Simiyu, 2012), international entrepreneurship (Styles & Seymour, 2006), public entrepreneurship (Klein, Mahoney, Mcgahan, & Pitelis, 2010), corporate entrepreneurship (Kearney, Hisrich, & Roche, 2008), strategic entrepreneurship (Ireland, Hitt, & Sirmon, 2003), and creative entrepreneurship (De Miranda et al., 2009).

Summary of Characteristics of the 79 Articles

Category	*n* (%)
Decade Overview	
1990-1999	5 (6%)
2000-2012	74 (94%)
Methodology	
Empirical study	27 (34%)
Qualitative study	11 (14%)
Theory & literature review	41(52%)
Topic	
Personality & motivation	25 (32%)
Education & training	29 (36%)
Globalization & economics	25 (32%)

Table 1

As far as methodology is concerned, most of the studies were from non-empirical paradigms: with two-thirds being based either on theory and prior literature (52%) or on qualitative approaches (14%). Within this non-empirical category, a number of studies were based on case studies (e.g., Nytch, 2012) or model building (e.g., Turnbull & Eickhoff, 2011). Among the empirical studies, most authors used survey instruments to measure the behaviors associated with entrepreneurship (e.g., Farrington, Venter, & Neethling, 2012). On the whole, it appears from the literature that more emphasis on quantitative methodology is needed.

The studied aspects of the relationship between entrepreneurship and creativity can be divided into three broad groups: personality and motivation, education and training, and globalization and the economy. The following discussion will further elaborate upon these three topics.

Personality and Motivation. This category of the sampled research seeks to understand or define who is an entrepreneur and to identify what antecedents contribute to becoming one. This body of literature derives from personality psychology, and focuses on measuring the relationship between entrepreneurial personalities and business performance. Taken together, its findings reveal that several salient traits tend to be present in successful entre-

preneurs: need for achievement, flexibility, creativity, innovation, and courage in the face of risk (Alvarez & Urbano, 2012; Apergis & Pekka-Economou, 2010; Halim, Muda, & Amin, 2011; Hildebrando, 2003). These qualities function as crucial motivation to entrepreneurial activity, affecting the decision-making process, opportunity recognition, and implementation orientation (Kinghorn, 2008; Pretorius, Millard, & Kruger, 2006). In sum, creativity has been found to have a positive association with entrepreneurial behaviors. Most importantly, it appears that entrepreneurs have a tendency to defy norms and a desire to transform conventional ways of thinking into new horizons.

Education and Training. This line of inquiry underpins the notion that creativity is an important ingredient in entrepreneurship education, whether for the promotion of *entrepreneurship creativity* (e.g., Sarri, Bakouros, & Petridou, 2010) or *entrepreneurial creativity* (e.g., Chen & Yan-Jun, 2009). One the one hand, it holds that the development of creative competency should be considered an important component in the higher education curriculum, not only for enhancing learning experiences but also for boosting entrepreneurial potential. Therefore, some scholars, operating within the constructivist paradigm, support the use of creativity-enhancing training programs on facilitating learning of nascent entrepreneurs (e.g., Leach, 2009; Lourenço & Jayawarna, 2011; Penaluna, Coates, & Penaluna, 2010; Turnbull & Eickhoff, 2011). On the other hand, entrepreneurship education, for nascent entrepreneurs, can include useful resources for mapping a variety of possibilities and ventures. For example, Antonites (2004) points out that creativity, innovation, and opportunity findings are important issues for entrepreneurship training. Heinonen, Hytti, and Stenholm (2011) found creativity is associated with opportunity-search strategies for generating business ideas. Accordingly, pedagogic approaches and curriculum development underlining the cultivation of creativity have become an important agenda for business schools (Benson, 1993; Boyle, 2007; Penaluna & Penaluna, 2009). Beyond the sphere of education, the design of training interventions surrounding creativity and innovation are also important components of organizational development (Elenurm & Alas, 2009; Sarri et al., 2010). To sum up: the leading concern for educators is how to enhance students' learning fruits. Curriculum design and instruction should be carefully crafted in order to keep a balance between analytical and creative approaches, both of which are suitable to tapping the mind for entrepreneurial thinking (Binks, Starkey, & Mahon, 2006; Kirby, 2004).

Globalization and the Economy. In this stream of research, creativity is treated as a mediating or moderating variable between entrepreneurship and economic development. More specifically, this type of research focuses on the linkages between and among entrepreneurship, creativity, and regional, national, and global business operations and marketing (Hall & Rosson, 2006; Hatzikian & Bouris, 2007; Styles & Seymour, 2006; Vliamos, 2008). Gantsho and Karani (2007) argue that supporting entrepreneurship and innovation will enable a society to create incentives for advancing economic development. Monahan, Shah, and Mattare (2011) found that the character of the national economy has a profound effect on entrepreneurship success. DiPietro (2003) argues that the extent to which creativity is emphasized can determine the economic progress of a nation. Part of the reason for this is that creativity is treated as a beneficial vehicle whereby entrepreneurs can overcome unique challenges, especially in the new-venture context (Fillis & Lee, 2011). At the same time, it is presumed that the nation should provide an entrepreneurship-friendly environment to facilitate entrepreneurship activities, which in turn create wealth for the nation by

exploiting visible and invisible resources. More specifically, this triangular linkage between entrepreneurship, creativity, and the economy can be manifested in three dimensions: an entrepreneurial mindset, an entrepreneurial culture, and entrepreneurial leadership (Ireland, Hitt, & Sirmon, 2003). In brief, whether approaching the subject via the lens of micro- or macro-observation, these scholars make a contribution to the critical analysis of the influence of the entrepreneurship phenomenon on national socio-economic development (Imas, Wilson, & Weston, 2012). It is believed that policy-makers and practitioners should also concern themselves with how to create new ventures for the common good. Most importantly, all stakeholders should be drawn to the same platform to discuss the development of industries and related issues.

Discussion and Implications

A major finding of this meta-analytic review is a possible link between entrepreneurship and creativity. A root the assumption of the entrepreneurship literature, both theoretical and empirical, is that creativity is the prerequisite for entrepreneurship. As we have seen, three broad themes surfaced in the literature: personality and motivation, education and training, and globalization and the economy. Under third torch of analysis, it seems to pave the way for the legitimation of the concept of creativity in the entrepreneurship literature. The specific role of creativity for entrepreneurship has become the center of attention, gaining its status as a serious scholarly research topic, and enjoying much public interest.

Creativity *per se* can be viewed as a spirit of entrepreneurship (Buchholz & Rosenthal, 2005), which is manifested as a mediating or moderating variable for entrepreneurship success and economic development. On the one hand, empirical evidence indicates a positive relationship between entrepreneurial behaviors and creative thinking. This feeds an argument that successful entrepreneurs are more likely to exhibit creative and flexible thinking, which allows them to come up with unique solutions while facing various challenges. On the other hand, it is argued that creativity should be integrated into entrepreneurship education, and more specifically, that the ideas of creativity and entrepreneurship are two key elements for the business curriculum. Therefore, it is held to be beneficial to cultivate entrepreneurial and creative behavior among business students. Taken as whole, entrepreneurs equipped with creativity can attain a high ratio of success amid the turbulence of the global business world.

In terms of the construct of creativity in the entrepreneurship research, it is clear that this domain is still expanding, and indeed remains in a fledging stage. With the trend of globalization, moreover, researchers should be aware of the culturally nuanced feelings of diverse groups toward the idea of entrepreneurship. With regard to empirical research in particular, the causal inference between entrepreneurship and creativity is still weak. The absence of this causal link makes our understanding of the entrepreneurship landscape incomplete. In this review, only two studies (Antonites, 2004; Leach, 2009) utilized experimental methodology. Thus, for future entrepreneurship researchers, pursuing causality more aggressively is needed. A possible focus could be a much more rigorous assessment of the direct or indirect effects of creativity on entrepreneurship. To this end, cross-field, cross-cultural, and cross-methodology approaches should all be considered.

For practitioners and educators, the implication of this review is quite clear: entrepreneurial skills are teachable. Creativity is one of key parameters of entrepreneurial skills.

Thus, it is suggested that building creative competency is necessary for their toolboxes. There are a large number of resources available in the creativity literature and in the market. Entrepreneurs can take advantage of this abundant reservoir in order to maximize their efforts for success. Education is an important means for potential entrepreneurs to cultivate and develop their repertoire. As a result, entrepreneurship education is a promising industry for the future, to which more funding, research, and resources should be allocated as the role of the entrepreneur becomes ever more significant in society.

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6 PHILIP DENNETT

A SOCRATIC APPROACH TO MANAGING CREATIVITY IN BUSINESS

ABSTRACT There has been considerable research on identifying antecedents of creativity and the determinants of organizational creativity but researchers are yet to develop an effective model for managing creativity within a traditional hierarchical management structure. It has been suggested that using the Socratic Method to create a learning environment within an organization is a way to foster creativity in an uncertain environment. In this context the Socratic Method is defined as a directed questioning technique to encourage critical thinking. This paper proposes that taking a Socratic approach to champion creativity will enable management to increase creativity in their teams, reviews the relevant literature to test support for this assumption and proposes a model to manage a Socratic Dialogue in a team environment.

Introduction

The importance of creativity in an organizational context was first highlighted by Schumpeter in 1942 when he said that the process of "creative destruction" (new ideas/ways destroying old ones to create value) was at the heart of Capitalism (1942, 82). However, creativity of itself is not enough to guarantee growth. Edith Penrose (1959), in espousing her theory of growth of the firm, points out that a firm's failure to grow is "often attributed to demand conditions rather than to the limited nature of entrepreneurial resources" (Penrose 1959, 37). Those demand conditions are not just market driven but are also influenced by the culture of an organization which in many cases doesn't tolerate trial and error decision-making (Thompson 1961, 486). The issue then is to be able to foster creativity in an environment that is not necessarily conducive.

While the ideal traits of the creative individual and the most conducive environmental conditions have been well documented by socio-cultural theorists such as Amabile (1983) and Csikzentmihalyi (1996) there is no clear framework identified for managers to use to foster creativity in real-world conditions where individual and environmental factors are less than optimal.

Decision-making is often the preserve of senior management and is not usually encouraged amongst the rank and file. Gratton (2007) proposes a new approach to management, based on Socratic leadership where, "The role of leader will be less about controlling and commanding, and more about igniting energy and enabling groups to volunteer and emerge." (45). The following literature provides support for this approach.

A Socratic approach to managing creativity

In today's hypercompetitive business environment there is an air of constant change as companies scurry to catch up to, or retain relativity with, their respective competitors. Often they must achieve this with fewer resources. The speed of this change means that companies "must become learning organizations; places in which everyone learns to do things better in an age of uncertainty." (Sonnenberg and Goldberg 2007, 54). While the authors mention a number of different approaches, they highlight the Socratic Method as being one of the best options.

Socrates famous *Method* is explained by Kachaner and Deimler (2008, 41) as the "practice of asking the 'right' questions to stimulate thinking." They say that companies who do, end up with a higher level of engagement and ownership of issues. Skordoulis & Dawson (2007) agree saying that this process is particularly useful in times of change where the status quo is being challenged. Socrates' directed questioning technique is also useful in both leadership and follower roles. Tucker (2007) identifies a number of different roles and applications that have been summarized in the following table:

Role	**Application**
Instructor	Critical thinking and comprehension
Mentor	Intellectual development
Leadership	Follower buy-in
Follower	Probe reasoning
Peers	Open dialogue and feedback

Table 1: Roles and applications for Socratic questioning

However if managers are to utilise the Socratic Method in promoting creativity in their teams, they must first understand how to effectively harness creativity to produce innovations that will lead to competitive advantage. While it has been demonstrated that employee creativity is of benefit to an organisation (Gong et al, 2009) and is a necessary step in gaining a competitive advantage (Oldham and Cummings 1996) ideas alone "are necessary but not sufficient condition for opportunities to emerge" (Dimov 2007, 718).

Amabile (1983), in discussing the social psychology of creativity, proposes a framework for conceptualising creativity that consists of domain-relevant skills; creativity-relevant skills and task motivation. This framework suggests that creativity is not something that happens in isolation but is the product of an individual's outlook, experience and environment. In order to benefit from creativity then, an organisation must create an environment conducive to creative thought and action. Or, as Amabile says "creativity requires a confluence of all components; creativity should be highest when an intrinsically motivated person with high domain expertise and high skill in creative thinking works in an environment high in supports for creativity" (Amabile 2012, 3).

What are the traits Amabile's intrinsically motivated person should possess to maximize their creative potential? A review of literature in the area identifies five traits relevant to creative action:

- self-direction/proactivity

- knowledge and experience
- risk-taking propensity
- social competence and
- resiliency.

Figure 1, on page 82, tabulates these characteristics identified by different authors, each of which is discussed below.

Self-direction/proactivity

Writing from a neuro-scientific perspective, Rock and Schwartz (2006), identify the importance of self-direction in developing insights (creativity). If insights are generated by the individual, the brain makes stronger connections than if the insight was given to them as a conclusion. If creative insights stem from individual proactivity in making new connections it is not surprising that there is growing consensus amongst academics that proactivity is a critical driver of organizational effectiveness. (Kim et al. 2009).

Knowledge and Experience

Without specific knowledge or experience the proactive or self-directed person will be restricted in their ability to conceive and act on new ideas (Sternberg in Sawyer et al 2003, 96). According to Ford (1996) "Accumulated experiences lead individuals to develop interpretive schema, preferences, expectations, and knowledge related to specific domains of behavior." (Ford 1996, 1117). Ford includes knowledge and ability as one of three major influences that either facilitate or constrain creativity (the others being sense making and motivation).

From an organizational perspective then, creativity depends not only on the individual but also on the structures that organize them (Sawyer 2006, 292).

Risk-taking behavior

Creativity, according to Florida (2002), requires "self-assurance and the ability to take risks." Risk features prominently in lists of personal qualities identified by researchers as an antecedent to creativity (Amabile, Gryskiewicz, Stanley 1987). However, in order for risk to be productive there must be organizational encouragement and tolerance (Amabile et al. 1996).

Social Competence

The interactionalist model of creative behavior first described by Woodman and Schoenfeldt (1989) confirms that creativity in an organizational context is characterized by individuals working together in a social context. The importance of this social element was illustrated in research conducted amongst research scientists by Amabile and Gryskiewicz (1987), who found that highly creative scientists had good social skills that enabled them to communicate better and have a stronger rapport with other team members compared with scientists who were less creative.

Resiliency

There is general agreement that resiliency and perseverance are important in the development of creative solutions (Amabile and Gryskiewicz 1987); Oldham & Cummings 1996; Fillis and McAuley 2000). According to Ford (1996) perseverance comes from an individu-

als sense-making process which attributes meaning to specific information and then dictates a certain action, even in the face of ambiguity. The resulting perseverance is therefore logical rather than being based on pure doggedness.

Of the five traits highlighted, *self-direction* is the one that must be fostered in all individuals for the Socratic approach to work effectively, as a disinterested individual will not actively participate in the questioning process that is designed to stimulate critical thinking. From an organisation's perspective the task of the manager should be to create an environment where employees feel engaged by identifying the conditions under which creativity will flourish.

Author(s)	**Self direction/ Proactivity**	**Knowledge/ Experience**	**Risk taking**	**Social competence**	**Resiliency**
Amabile and Gryskiewicz (1987)	Intrinsic motivation (self reliance)	Ability and experience	Risk orientation	Social skill	Persistence, lack of preconceptions
Florida (2002)	Self assurance, Intrinsic rewards, Individuality		Risk taking ability		Ability to synthesise
Fillis and McAuley (2000)	Internal locus of control, Independence		Risk taking behavior		Perseverance
Ford (1996)	motivation	Knowledge and ability			Sensemaking
Drucker (1985)					Identify and react to change
Gilson and Madjar (2011)	Intrinsic motivation				Problem driven, ability to abstract
Gong, Huang and Farh (2009)					Learning orientation
Mathison (2011)	Creative self-efficacy				
Oldham and Cummings (1996)	Intuition	Broad interests		Aesthetic sensitivity	Attraction to complexity, toleration of ambiguity
Tierney and Farmer (2002)	Creative self-efficacy				
Dimov (2007)	Action orientation			Social interaction	Continuous shaping

Figure1: Creative traits and competencies

Creativity and the Organisation

From an organizational perspective what are the conditions under which creativity might flourish? Amabile, Gryskiewicz and Stanley (1987, 25) identify them as:

- *Freedom*—"Freedom in deciding what to do or, more frequently, how to do one's work; a sense of control over one's work and ideas; a freedom from having to meet someone else's constraints; a generally open atmosphere."
- *Encouragement*—"Management enthusiasm and support for new ideas and new ways of doing things; an absence of destructive criticism and excessive fear of evaluation.
- *Resource and time*—"Access to appropriate resources, including facilities, information, funds, and people; sufficient time to solve problems in new ways.
- *Recognition*—"Appropriate, constructive feedback on one's work, along with appropriate recognition and rewards."
- *Challenge*—"A sense of challenge arising from the nature of the problem, a sense of pressure arising from outside competition or realistic time urgency."

However, in practice, the reality is that proactive behavior in organisations is often discouraged (Bateman and Crant 1999). They attribute this to the over-controlling effects of rigid company structures and instead advocate a management approach that encourages freedom to pursue broad organisational goals in "fruitful, creative, innovative ways" (Bateman and Crant 1999, 66).

While it is generally agreed (as discussed earlier) that creativity can improve business outcomes, the traditional management model "is built on a monocratic, hierarchically structured authority chain" (Cummings 1965, 221).

Creed (2011) expands on this theme by identifying five categories of organizational norms/rituals where traditional management and creativity are in conflict:

- Innovation—Conservatism: scale to assess tolerance of risk-taking
- Imprecision—Precision: rigid systems and processes vs more ad hoc approach
- Relationship orientation—Task orientation: collegial/people driven approach vs goal/performance driven
- Calmness—Aggression: individualistic, driven and competitive vs group, calm and sharing load
- Growth—Stability: fast-paced, high growth emphasis vs slow and steady planned management

The second descriptor on each scale is consistent with Cummings view of a traditional organization, whereas the first descriptor represents a more creative approach to management. *Thus creativity is the antithesis of a traditional hierarchical management structure.*

So, given that the culture of an organization can have a negative effect on creativity, how does a manager elicit creativity from team members? Woodman, Sawyer and Griffin (1993) say that while an organisation's characteristics create the context, organizational creativity is a function of both context and the creativity of groups within that organization.

Andriopoulus (2001, 834) identifies those contextual influences as a combination of:

- Organizational climate
- Leadership style
- Organisational culture

- Resources and skills
- Structure and systems.

This then is the role of a leader (of an organization or a group within that organization)—to create an environment where uncertainty and risk are tolerated and personal consequences in a creative environment are positive.

Socratic Dialogue Model

Figure 2: Socratic Dialogue Model

Socratic questioning can be used to stimulate a dialogue where participants' beliefs on an issue are challenged (elenchus) and found wanting by the participants themselves. From this resulting state of confusion (aporia) a joint search for truth is begun. Socrates typically began with a question such as "What is the point of X?" Paul and Elder (2006) agree that the question should relate to a belief or conclusion that is held or has been reached; however other authors suggest starting the dialogue with a collaborative agenda setting process (Bolten 2001; Chesters 2012; Andriopoulos & Lowe 2000).

The proposed Socratic Dialogue Model (Figure 2) synthesizes the approach of Socrates himself with the constructs of 21st century authors (Figure 3) for the purpose of application in a business context. It proposes that the initial question establishes a hypothesis that requires testing (what do we currently believe about the issue?) and is followed by a series of questions gathering evidence (what evidence supports our belief?); questions to uncover conflicting views (what conflicting views are there?); and finally a series of questions to explore the implications and consequences of the discussion (where does this dialogue lead us?).

The objective of the dialogue is not to make final decisions (Bohm 2010:19) but to engage participants in a creative process that "inspires further curiosity and open-minded reflection" (Skordoulis & Dawson 2007:993). This creative process can be used as a manage-

ment tool to engage participants in the decision-making process in order to foster increased understanding and ownership (Kachaner & Deimler 2008; Skordoulis & Dawson 2007).

Socratic Dialogue model	**The Question** *What do we currently believe about the issue?*		**The Evidence** *What evidence supports that belief?*	**The Argument** *What conflicting views are there?*	**The Results** *Where does this dialogue lead us?*	
Socratic Method	What is X?		Elenchus		Aporia	
Paul & Elder 2006	Examining origin or source	Belief, statement or conclusion	Support, reasons, evidence and assumptions	Opposing thoughts and objections	Implications and consequences	
Bolton 2001	Original questions formed in collaboration with participants		Information gathering	Argumentation	Results	
Chesters 2012	Problematic situation	Constructing an agenda	Gathering and suggesting	Reasoning and analysis	Making judgements and self correcting	Concluding
Andriopoulos & Lowe 2000	Adventuring		Overt confronting	Portfolioing	Opportunising	

Figure 3: Approaches to creating a Socratic Dialogue

The Question

Socrates typically started with a challenging question, the answer to which people often claimed to know but upon further questioning they started to critically examine their

thinking. Paul and Elder (2006) suggest that as part of this process, the origin or source of those beliefs should also be questioned. This process encourages participants to be self-directed by challenging what they may have been told before and putting them in a situation where they have to actively consider their beliefs. Bolten (2001) suggests a caveat that the original question should be formed in collaboration with participants, a collaboration which Chesters (2012) says should include constructing an agenda. Andriopoulos and Lowe highlight the creative aspect of this process by using the term 'adventuring' as part of creating a perpetually challenging environment where "individuals are encouraged to explore uncertainty, so that they can generate innovative solutions." (Andriopoulos and Lowe 2000, 736).

The Evidence

A desired outcome of this second part of the Socratic Dialogue is that the questions should be challenging and produce a realization that a contrary view is possible or even probable (elenchus). It is important for the questioning to be overt and confronting (Andriopoulos and Lowe 2000) and to ask participants to provide evidence of their beliefs (Paul and Elder 2006) to differentiate from assumptions. This process encourages people to use their experiences to reflect on alternatives.

The Argument

By this point participants should be ready to question their beliefs and consider opposing thoughts and objections (Paul and Elder 2006) and at the same time be prepared to argue with other participants (Bolten 2001) to ensure all conflicting views are exposed and examined. At this point of the dialogue group dynamics come into play and participants are forced to consider other opinions. It can also be a test of participants' resilience.

The Results

The final result stage is to examine the implications and consequences (Paul and Elder 2006) of the preceding dialogue. While Chesters (2012) suggests that a conclusion is required this shouldn't be seen as an ending of the exploration of the issue, rather a summation of the current situation and hopefully as a starting point for further exploration (Bohm 2010, Skordoulis & Dawson 2007).

Model Validation

To test the model's applicability in a business context, a program consisting of two phases was designed and tested in the field with a service based small to medium enterprise (SME) with approximately 7 staff members. The program started with a series of in-depth, semi-structured oral histories that were recorded. The interviews were conducted with the workers in their own environments ('natural location', Hussey and Hussey 1997) using a small number of probing questions. (Sanders, 1982, 357). Follow up interviews were conducted at the end of Phase 2 to determine the change in participants' perceptions relating to creativity within the organization.

Phase 2 consisted of a workshop, facilitated by the author, using the Socratic Dialogue Model based on a question the company wanted to explore.

Results

To commence the Socratic Dialogue, the question posed was: *"What are the distinct competencies we have over our competitors?"* In exploring what participants currently believed there were 6 points raised and agreed on by participants. Taking each point in turn, participants were asked to provide any supporting evidence for their beliefs. Interestingly, the only 'evidence' that participants could come up with was a broad "feedback from clients" statement which created a sense of *aporia* in the group as the reason this question was raised originally was because the company wanted to improve their responses to tender requests after they had feedback that their standard response lacked strong supporting evidence of claims made.

This led into the third stage of the Dialogue (Argument) where each of the 6 points were examined by initially posing the question "Could your competitor's claim the same thing?" As a result there were four claims abandoned and the two remaining ones were questioned further by asking participants to describe how these attributes were manifested in projects they had worked on.

In the final stage of the Dialogue (Results) the descriptions provided by participants were assembled to form part of a proposed project management methodology they could field test and then use as evidence of their unique capabilities.

The session lasted approximately three hours and all the participants expressed surprise that a problem they had found difficult to resolve could be solved so quickly. They also felt encouraged to refine the methodology they developed in the session further.

In subsequent interviews all of the participants agreed that the process was both painless and also gave them a sense of ownership that they didn't have before. This feeling can be summed up best by the comment of one participant who said: "Yes, I definitely think the process we went through got us to a good answer to our question. And, I suspect it could encourage empowerment, inclusion and as a result creativity in an organisational situation. It gave me confidence to think more creatively in future."

Implications

The objective of this initial test was to determine whether the Model could be successfully applied in a real world context and the result indicated that the process was robust. Specifically:

- The process was an easy one to work with. No one was confused by the task or had questions that weren't covered in the introduction to the Model.
- Incorporating Bolten's (2001) recommendation that participants should be a part of the decision on the question to be posed meant that participants quickly became actively engaged.
- The process produced an outcome that participants were happy with and provided a platform for future creative endeavors.
- Feedback from participants afterwards supported the hypothesis that creativity would be enhanced through using this process.

Further empirical testing of this Model is required to validate its applicability in a wide range of business contexts and to expose any limitations or adaptations that may be required.

Summary

Researchers have identified five antecedents of creativity in an individual; however, in order to harness that creativity an organization must provide a supportive environment that tolerates mistakes. The challenge for managers is that they often work in an environment that is less than supportive or tolerant and their teams are made up of people with varying degrees of creativity. Sonnenberg and Goldberg (2007) suggest that using the Socratic Method to create a learning environment within an organization is a way to foster creativity in an uncertain environment. This paper identified and empirically tested a Model that can be used by companies to foster creativity in their organisations. The model requires further testing to prove its applicability in a broader range of contexts.

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7 ANDRÉ P. WALTON

THE INDIVIDUAL VERSUS THE GROUP—A UNIQUE APPROACH TO THE ORIGINS OF CREATIVITY

ABSTRACT There are many contradictions within the human psyche; however, there is one dichotomy of particular interest to the study of creativity. One the one hand we all need connections with others. We group memberships and to be able to relate to others on many different levels. On the other hand, we also need to be, and to be seen to be, unique. Unfortunately we cannot focus on our similarity to others (our group memberships) simultaneously with our difference from others (our uniqueness). In this chapter I explore how this apparent contradiction forms the foundation for creative thought. I conclude by looking at how this new model of creativity answers long standing questions regards the inefficiencies of brainstorming, and also how our current passion for the development of teams leads to personal satisfaction by team members but may not lead to enhanced creativity.

Introduction

For over 150 years researchers have been using the 'scientific method' to research the origins or sources of creativity. Since the work of Alexander Bain (1855-1977), William James (1880), and Ernst Mach (1896) in the 19th century, there have been several efforts to systematically uncover the nature of the processes underlying the generation of unique ideas and works. These early researchers laid the foundations of current creativity research. William James (1880), for instance, clearly described the psychological processes behind what is now called divergent thinking, which is commonly thought to be intimately linked to creativity (Koestler, 1964; Mednick, 1962; Torrance, 1974).

The overwhelming majority of subsequent research into creativity has conceptualized it as an individual-level phenomenon (Paulus & Nijstad, 2003). That is, the source and processes of creative production have been considered as primarily located within the individual, with situational circumstances merely influencing these intrapersonal processes. This conceptualization does not take into account that people are embedded within groups, and the substantial influences that relevant others, and group norms, have. This approach to creativity research has been applied in several areas. Most obviously, eminent 'creators' have been observed, questioned and tested to see what it is that they might have in common, on the assumption that these common traits might offer some clues regards to the origins of creativity (e.g., Barron, 1961; Mackinnon, 1965). This individual-level research approach has also been applied to archival and biographical studies of eminent creators throughout history. Some of the factors that this research approach has identified include: that eminent creators are more likely to have come from unconventional family backgrounds (Simonton, 1994), such as immigrant families (Goertzel, Goertzel, & Goertzel,

1978; Helson &Crutchfield, 1970); and, that they may have been orphaned or, at least, suffered the loss of one parent (Eisenstadt, 1978; Roe, 1952; Walberg, Rasher, & Parkerson, 1980). Although these research approaches identified some differences in skill-levels, abilities, backgrounds and personalities between more creative and less creative individuals, there were few really useful insights regards the inner workings of the creative mind across multiple domains.

The social context of creativity: Individual vs. the group

Later work in the social sciences, the development of social identity theory, for instance, (Tajfel, 1981; Tajfel & Turner, 1986) has given considerable credence to the notion that our actions and, indeed, aspects of our personality, are strongly influenced by others, via interactions with our ingroups. Social identity theory stresses the importance of "…the individual in the group" (Hogg & Abrams, 1998, p.3). Fundamental to social identity theory and its more recent elaboration, self-categorization theory (Turner, Hogg, Oakes, Reicher, & Wetherell, 1987), is the notion that individuals seek to define some aspect of their identity through a process of social consensus (Moscovici, 1976; Tajfel, 1972). Social consensus involves deciding whether a particular behavior or action is appropriate by employing information as to how similar others have behaved or would be expected to behave in similar situations (Darley & Latané, 1970; Festinger, 1954; Schachter & Singer, 1962). The perception that relevant others will disagree with a proposed action, idea, or opinion, often results in uncertainty, or some other negative feeling, which helps maintain adherence to established practices (Abrams, Wetherell, Cochrane, Hogg, & Turner, 1990). In the course of defining identity, then, individuals compare their behavior, or intended behavior, with that of others. Thus, identity definition is dependent upon establishing expectations as to whether relevant others will support or chastise one's opinions or actions (cf. Ajzen & Fishbein, 1980; Fishbein, 1967; Fishbein & Ajzen, 1975). Insomuch as creativity represents a departure from established thoughts and practices, (in other words, it is inherently anarchic) it represents a challenge to the relationship between the individual and the group (including the group 'society'), despite the fact that individuals need their groups in order to help define themselves. This tension is critical to understanding what motivates people to be creative, and forms the focus of this chapter.

This tension between the individual and the group is particularly strong when group norms are not supportive of individual expression, but must, to some degree, be present in all acts that depart from normative thought patterns and actions. When individual expression (including creativity) is not supported by the group, there are two sources of tension: First, because being creative (or expressing individuality in any other way) requires a departure from the way that others in the group think and act; and, second, because the very act of exhibiting individualism is disapproved of, or, at least, not supported. In contrast, then, exhibiting uniqueness (including creativity) is a trait that might reasonably be associated with an individualistic environment, in which acts which distinguish an individual from social stereotypes (such as creative expression) are encouraged.

Creativity and culture

Individualism and collectivism describe the ways in which individuals feel socially connected to others (Earley & Gibson, 1998). The terms have also been defined as: "… describing the relationship between an individual and members of a common group membership" (Oyserman, Coon, & Kemmelmeier, 2002; Triandis, 1995). In environments that are highly collectivist, ingroup members share a sense of solidarity and mutual obligation, and expect other group members to do the same. This suggests that departures from the established way of thinking and acting might be considered asocial and be disapproved of. In organizations emphasizing collectivist norms priority is placed on group (e.g., work group, or, organizational) goals, and individuals are encouraged to work and cooperate *with* others to achieve those goals. Any benefits that are allocated for goal achievement are typically awarded to the group as a whole. In environments where individualism is high, on the other hand, independence and personal needs take priority. Organizations structured along individualist lines give priority to individuals' goals, and reward members based on individual achievements (Ho, 1993; Voronov & Singer, 2002).

Although this simplistic description might suggest that individualism and collectivism are mutually exclusive and in opposition, this is not necessarily the case. Both individualism and collectivism can operate in all societies in varying degrees (Ho & Chiu, 1994; Triandis, 1995). Each society has different domains and contexts within which different norms apply. Those working in a branch office but sharing the individualist organizational norms of, say, an American multinational, while living in a collectivist country, may adopt more individualist tendencies in the work environment, where individualism is the norm, than when socializing with friends outside the workplace, where more collectivist norms apply. Although the United States is said to be the bastion of individualistic principles (cf. Oyserman et al., 2002), one might not guess this from watching a football or baseball match with the audience all wearing one or the other team's colors. It has been suggested, then, that individualism and collectivism can be viewed as separate dimensions (Earley & Gibson, 1998; Oyserman, 1993; Triandis, 1995) in order to better accommodate such anomalous behavior; or someone within a collective displaying individualistic (for instance, creative) behavior. Thus, it is possible to have both individualist and collectivist sub-groups coexisting within the same environment, whatever the prevailing social norm (Earley & Gibson, 1998), level of analysis (Schwartz, 1990), or situation (Triandis, 1995). At a micro-level, an organization operating along individualist principles, for instance, may have collectivist groups working within it, or vice versa.

Subtle changes in definition can influence the implications of individualism vs collectivism. Deaux and Reid (2000) defined collectivism as a 'way of identifying' with a particular group or category. Using this approach, variations in degrees of collectivism can be considered down to the individual level. In other words, not all group members will share the same sense of individualism or collectivism regarding the group, and, perhaps more importantly, people do not relate to all groups with the same collectivistic or individualistic orientation.

Although collectivism and individualism have their origins in the categorization of societal differences (Hofstede, 1980), they have been extensively studied in many contexts and levels of analysis, including in organizations (e.g., Earley, 1993; Van Maanen, 1991). At both societal and organizational levels a defining characteristic of collectivism is that indi-

viduals share a sense of connectedness and identification with their ingroups. Collectivists tend to draw more clearly defined ingroup-outgroup boundaries than individualists and are also primarily supportive of ingroup members. This may be one reason why there has been an emphasis on hiring employees who display 'collectivist' characteristics (Blackburn & Rosen, 1994), which may be positive in terms of team building and social harmony, but may not have positive implications for creativity. Individualists, on the other hand, have looser ties between themselves and others, and are characterized by the expectation that everyone should primarily look after his or her self and their 'extended-self' (i.e., their immediate family) (Hofstede, 1991). The looser nature of these ties enforces the notion that creativity should be greater for individualists than for collectivists, since the forces binding the individual to the group are weaker and present less of a hindrance to establishing distinctiveness. The tendency to prefer to hire 'team players' (Blackburn & Rosen, 1994), then, may run counter to the goal of enhancing creativity and innovation within an organization.

Research suggests that there are differences regarding the absolute levels of creativity between collectivists and individualists, with those in an individualist environment tending to be more creative (Walton, Kemmelmeier, 2012). However, it also appears that different types of creative products emerge from collectivist and individualist communities (Bhawuk, 2003). Where the expression of individuality is emphasized, creative products are diverse and of a form that differentiates the individual creator from others. In collectivist cultures, however, creativity tends to be supported primarily when its products are sanctioned by the group and, therefore, tend to be more evolutionary than revolutionary (Bhawuk, 2003). Kathakali is a stylized classical Indian form of dance-drama noted for the attractive make-up of characters, elaborate costumes and detailed gestures and body movements. Kathakali dancers are permitted to show individuality but only in very subtle ways, with the result that the dance form has changed very little over the centuries. On the other hand it is no accident that extreme forms of music, such as those of Berio, Boulez, Stockhausen, or Frank Zappa, or art, such as cubism or surrealism, have tended to emanate from more individualist cultures. In other words, cultures which differ with regard to their individualism-collectivism orientation do appear to differ with regard to the types of creative products that they produce; and there is no reason to believe that this same phenomenon should not exist at the level of organizations.

Creativity: A social phenomenon

Creativity, then, is an inherently social phenomenon, with individuals being creative with reference to a particular social framework, such as membership in a group or groups, with which there is also tension. Creativity has the potential to be influenced as much by this social context as it is by intrapersonal processes, and the social context may be more or less conducive to, and supportive of, creative expression (Csikszentmihalyi, 1988). For instance, environments characterized by freedom from criticism and individual-level autonomy have been found to be supportive of creativity (Amabile & Gryskiewicz, 1989). On the other hand creativity tends to be stifled in environments characterized by red tape, lack of respect, norms that do not prize innovation, and where failure is considered unacceptable (Witt & Beorkrem, 1989).

In this chapter I argue that the study of creativity needs to be approached from the perspective of individuals being creative within the context of their social framework, including group membership. While there has been research into many potential influences on creativity within organizations, for instance organizational size and structure (Baldridge & Burnham, 1975; Drach-Zahavy & Somech, 2001; Zajac, Golden, & Shortell, 1991), the availability of resources (Nohria & Gulati, 1996), and individual-level considerations (Barron & Harrington, 1981; Howell & Higgins, 1990; Scott & Bruce, 1994) group-level, specifically normative, influences have had little consideration.

The study of creativity from a social psychological perspective is not particularly new, and has been studied with increasing vigor over the past 35 years (Amabile & Pillemer, 2012). In 1950 J. P. Guildford encouraged creativity researchers to adopt a social perspective in their studies. Although the seminal psychological studies of eminent creators at the Institute for Personality Assessment and Research at Berkeley, mentioned above, produced predominantly individual level results, they also identified environmental factors that their creative participants had in common, such as background. However, in the present context, I would like to examine the study of creativity from a social psychological perspective at a somewhat deeper level. Much of the social psychological study of creativity has still considered the context of creative thought and action from a predominantly individual perspective. For instance, Kruglanski, Friedman, and Zeevi, (1971) published research regarding how extrinsic reward influences individuals' motivation to be creative. This research subject became the focus of much of Amabile's earlier work (e.g., Amabile, 1979), which continued the interest of her graduate advisor, Mark Lepper (Lepper, Greene, & Nisbett, 1973). Other factors external to the individual that have been studied include the influence of being observed while being creative (Shalley & Perry-Smith (2001), either with the intention of providing participants with useful performance feedback, or with an evaluative motive (Deci & Ryan, 1985). In an organizational context, this 'situational' approach to creativity shows up as the consideration of the importance of leadership style (Herrmann & Felfe, 2012), the influence of stress (Walton & Kemmelmeier, 2012), team member commitment (Sousa, Monteiro & Pellissier, 2009), and, diversity (Hoever, van Knippenberg, van Ginkel & Barkema, 2012), among other factors.

Although, from one perspective these research approaches are social psychological, I would argue that they are still biased towards 'psychosociology' in that they still consider human creative performance at the individual level as influenced by these external factors. What is still not evident in the field of creativity research is a perspective that places creative acts and thoughts within the context of the tension between the individual and the group.

In the first quarter of the last century, George Herbert Mead (along with Charles Cooley) lead a field of sociology now known as Symbolic Interactionism (SI) (Blumer,1969). Symbolic interactionists see reality as social, developed interaction with others. In other words, they believe a physical reality exists through an individual's social definitions, and that people do not respond to this reality directly, but rather to the social understanding of that reality. Furthermore, under the SI view of the world humans exist in three realities: a *physical objective reality*, a *social reality*, and a *unique reality*. The *physical reality* relates to the material world, our necessities and 'natural facts' (Blumer,1969; Meltzer et al., 1975). *Social reality* reflects a person's socially derived conception of the world. This might include its economic and power-related structure, gender roles, social institutions, etc.. Finally,

and of particular interest to us, the *unique reality* reflects a person's ability to do something unique; to demonstrate their individuality and be creative. From this perspective, everyone has a *unique reality* which may be transformed into a *social reality*. Society cannot be separated from the individuals within it because, first, they are both created through social interaction; and second, one cannot be understood without the other. Although, for a variety of reasons, supporters of SI have been somewhat marginalized, for our purposes it is interesting to note that there is other evidence of the distinction and tension between *unique* and *social* realities.

Distinctive or merge into the crowd?

Humans are replete with contradictions, one of which is of particular interest in the context of creativity. On the one hand, humans have a strong drive to be connected with others. There is ample evidence that feeling connected to relevant others is critical for our well-being (Jarvenpa & Brumbach, 1988), and for optimum psychological (Baumeister & Leary, 1995) and social functioning (Corporeal, 1997). Baumeister and Leary (1995), for instance, considered group affiliation truly a need, comparable to basic physiological needs, rather than just being a desire. In a similar vein, in his formulation of self-actualization, Maslow (1968) suggested that the need to form close social ties was just one step removed from more basic needs, such as for food. It has also been shown that this inner need for close, intimate bonds is universal, and strengthens under situations of threat (Elder & Clipp, 1988; Rofe, 1984).

This basic human need for affiliation is, however, contrary to another human drive: to demonstrate our uniqueness and distinctiveness from others. There is a fundamental tension between our need to demonstrate our individuality and the need for connectedness with others (Snyder & Fromkin, 1980; Brewer, 1991). Creativity was not the explicit focus of either Brewer or Snyder and Fromkin, but having novel ideas and performing creative actions is intimately related to the process of establishing distinctiveness, which was central to their theories.

The contradiction between the needs for connectedness and the demonstration of individuality has important implications for individual creativity. The psychoanalyst, Otto Rank (1932/1989), saw the creative process as being in direct opposition to our need for group affiliation, with the individual having to leave the comfort of shared social values in order to indulge in the socially distancing behavior of demonstrating individuality through creative self-expression. Rank went even further to suggest that humans seek immortality (cf. Becker 1973), which, Rank believed, could be satisfied by distinguishing oneself from others during life in a way that would be remembered even after one's death. In other words, through creative action individuals anticipate that others will respect their uniqueness and afford them some degree of (at least, symbolic) immortality.

Creative behavior, then, is associated with the tension between the human needs for connectedness with, and distinctiveness from, others. As illustrated in Figure 1, because creativity sets the individual apart from the group, any influence encouraging creative behavior is likely to reduce the individual's sense of group membership.

Figure 1: The tension between our needs for connectedness with others and to display uniqueness

To put it another way, when we are interacting with members of one of our groups it is our *similarity* with others that is salient. When we are, for instance, being creative (or displaying uniqueness in any other way), it is our *difference* from others that is our focus. The first of these points may be more obvious than the second. When we pursue an activity that involves something unique (it is creative, in fact), we focus on treading a cognitive path that has not been trodden by ourselves or others before. In other words, the very act of thinking or doing something that displays our individuality is inherently creative; and trying to be creative requires us to do something different and (at least conceptually) break away from our old thinking patterns and those of our group. In order, then, to demonstrate individuality (through creativity, for instance) we have to leave the comfort of group norms and established thought patterns, and break away on our own.

Any force, then, that increases association between the individual and the group can be expected to reduce the motivation to create, and vice versa. Interestingly, simply watching someone causes them to be less creative (Amabile, Goldfarb, & Brackfield, 1990), which, under the *individual versus the group* model, could be explained by the fact that the mere presence of someone else increases the salience of the group. Further evidence for this dynamic was generated by Arndt et al. (1999), who found that participants asked to perform a creative task while group membership was simultaneously made salient, experienced elevated guilt ratings; an indication of the contradiction between creativity and group affiliation. Also, work by Routledge et al. (2004) further confirmed that increasing the desire to affiliate with one's ingroup discourages creative expression.

The theoretical positions espoused by Rank (1932/1989), Snyder and Fromkin (1980), and Brewer (1991), as well as the findings by Arndt et al. (1999), Routledge et al. (2004), Amabile et al. (1990) and Walton et al. (2012), suggest that the expression of creativity is inherently antithetical to connectedness with others. Thus, creativity can be expected primarily when the individual has only loose ties with the group, since breaking away in order to indulge in unique thoughts and actions is easier than for those who feel closely attached to other members of their ingroups.

Organizational implications for the Individual vs. the Group model Brainstorming

When Alex Osborn (1948, 1957) popularized brainstorming he anticipated that it would double the number of ideas that people would be able to generate in response to a problem, challenge or question. Osborn was a partner in an advertising agency that was widely regarded as the most innovative firm on Madison Avenue, B.B.D.O.. The book "Your Creative Power", published in 1948, was not a scientific treatise, it was an early 'self-help' book for those wanting to be more creative or to stimulate greater creativity in their organizations. In this best-seller, Osborn promised that the average reader could double his creative output, catapulting career success, happiness and imagination. The technique by which Osborn gained his immortality is introduced in Chapter 33, "How to Organize a Squad to Create Ideas."

Osborn believed that brainstorming was central to B.B.D.O.'s success, and he described it in military terms: "When a group works together, the members should engage in a 'brainstorm,' which means using the brain to storm a creative problem—and doing so in commando fashion, with each stormer attacking the same objective." Although for Osborn

brainstorming was the key to turning a group of employees into idea machines, it proved not to be the case. In fact, research later showed that it actually *reduces* the number of ideas a group produces when compared with the number of ideas that can be generated by those same individuals on their own (Diehl & Stroebe, 1987; Lamm & Trommsdorff, 1973). This was a source of frustration to Osborn for the rest of his life.

There are several explanations regards why brainstorming underperforms individual thought in terms of generating ideas. These include the phenomenon by which team members strive for consensus (thus, not fully evaluating all possible options), known as Groupthink (Janis & Mann, 1977). Diehl and Stroebe (1987) showed that much of the low efficiency in interacting brainstorming groups could be attributed to 'production blocking', which occurs when factors such as waiting for your turn to speak keeps individuals from contributing some of their ideas. Also, motivational losses were reported by Paulus and Dzindolet (1993) in brainstorming groups, whereby group members lowered their performance goals because of social comparisons with other less-productive members. But even after precautions are taken to minimize the effects of these shortcomings, evidence does not seem to show that groups of people can outperform the ideation ability of individuals (Connolly, Routhieaux, & Schneider, 1993; Mullen, Johnson & Salas, 1991).

The Individual versus the Group model of creativity provides one possible explanation. As long as we gather people together to perform a task (such as generating ideas in order to solve a problem) we generate an environment in which the group becomes salient, along, of course, with group membership. If, however, we generate ideas on an individual basis, by sending group members off in all different directions, so that they are not even in the proximity of each other, for instance, we might reasonably expect to optimize the ideation stage of the problem solving process. In other words, the very act of making people members of the brainstorming 'group' or 'team', may cause them to think in a less individualistic way. We can bring the individuals together later to share and discuss their ideas and, consequently, build on them. Individuals can 'diverge' once again if it is considered necessary, before the idea list is finalized and one idea chosen. The further creative problem solving stages, including implementation, can, of course be conducted by the group as a whole (or by selected members from it, depending on their skills), the critical ideation stage having been completed at the individual level.

Team building

"[And] the ideas that allow an organization to achieve, grow, and prosper as opposed to merely survive will be created only when teams leverage their combined skills and hold themselves mutually accountable. No individual, no matter how brilliant, is likely to have the skill set to take projects from start to finish in this fast-paced and complex environment." So writes Bruce Piasecki (2013) regarding innovation at the organizational level. This author thoroughly agrees! However, the process of innovation is a multi-stage one, one of the earliest stages being that of generating ideas. With regard to this step, as discussed above, there is evidence that teams may not contribute to the process of creativity (Paulus, & Yang, 2000). If this early (and critical) step in the innovation process is flawed then it follows that the whole innovation process will be sub-optimal. Team building within organizations, then, appears not to be the silver bullet for all situations. When the goal is innovation, a team may be critical in taking an idea to market. Many contemporary

products are complex in terms of materials used and skills needed to combine technologies effectively. However, the generation of the initial idea to take to market may be best done by individuals working independently. In other words, clearly separating the creative idea generation stage from the rest of the innovation process may be strategically important.

Hiring and corporate structure

Running an organization full of anarchists may not be every manager's idea of an ideal life! However, if we accept that it may be critical, in the current fast-paced, turbulent economic environment, to build an organization geared towards creativity and innovation, then it may behoove us to hire some individualists. Abraham Maslow (of whom I wrote earlier, of 'hierarchy of needs' fame) talks of the "lone wolf" nature of many creative people (in a speech he delivered to the U.S. Army Management School in 1957, and cited by Sidney Parnes (1992)). This "lone wolf" character may be the one needed in organizations seeking to be innovative. However, the lone wolf will only serve the purpose of catalyzing creativity and innovation *if* the environment is right. These people may not be seduced by power or pay, they may need other incentives ....

If you look closely at the organization of which you are a part, or an organization with which you are intimately familiar, are there structures, rules or norms in place that are restrictive but unnecessary? If so they will probably dissuade our lone wolf from joining the organization. The anarchist creator typically has looser ties to the group. They will not necessarily 'hang on in there' if they do not like the culture within which they are working.

In the early days of Hewlett Packard, this heavily engineering biased organization (Bill Hewlett and Dave Packard both graduated with electrical engineering degrees from Stanford University) had a policy that any of their engineers could borrow equipment from a central pool, even to take home with them to pursue non-organizational goals. Whether it was Hewlett and Packard's intention to create 'fuzzy boundaries' between corporate goals and individual ones, is unknown, but it may demonstrate that these two founders of a great organization had insights into how dispensing with certain structures may help keep the interests of unconventional employees.

Corporate culture

I wrote earlier about individualism versus collectivism at several different levels, but at the organizational level this equates very specifically to allowing the individual the freedom of personal expression. There may also be reward structures in place that provide extrinsic incentive at the individual level, but, perhaps more importantly, those rewards should be specifically related to creative or innovative achievement; and that kind of reward may be more important than its mere cash value. Rewarding creative and innovative behavior lets everyone know that *it is O.K. to be creative!* as well as showing value at a material level.

Remember, from earlier in this chapter, that individualism and collectivism can coexist. So, even if an organization is committed to a team-oriented culture, so essential for the implementation phase of innovation oriented goals, and wherein many of the tasks and goals of the company are being addressed by a group of specifically chosen people, there is still plenty of room for individualism. Since innovation is an iterative process, individuals'

creative contributions, while critical at the idea generation stage, are also important throughout the whole process.

Leadership style

The unfortunate thing about chapters that include anything about leadership style is that for every leadership model you read about, the next successful leader you meet in real life seems to have many characteristics that are contrary to that model! Despite wide differences, there are several characteristics that successful leaders tend to share (Walton, A., 2010). First, they often seem to make one of their priorities keeping an eye on the future. Whatever else is going on they make sure they have a little time and energy to see all the possibilities regarding where the organization could be heading. Second, they tend to initiate systems, programs and goals. Third, they tend to be realistic in their demands of people and considerate in what they ask of them and how they ask it. Especially important in the context of the current discussion, they recognize people's individuality and their ability to contribute; and they are tolerant of their failures. Forth, they are able to think and communicate clearly and unambiguously.

In the context of generating a creative environment, then, creative employees need their space and they need to be seen to be, and respected as, individuals. They will also be at their most creative when they don't feel they have to be continually looking over their shoulders and worrying about the stability and future of the organization. Therefore, our creative organization needs strong guidance, even though it should avoid unnecessary structure. Strong guidance includes clear, realistic goals which everyone feels they 'own'. The space for creativity and the expression of individuality do not equate to freewheeling or drifting. It is exciting working within an organization that feels as if it is being lead by a futuristic thinker and where employees feel that the leader is one step ahead of the competition. Even though people like some degree of stability, to be creative they also need change. A charismatic leader who mixes things up by introducing new ideas and processes from time to time does a lot to prevent everyday activities becoming humdrum. That is good for innovation and supportive for the creative mind.

Don't worry, be happy!

The history of literature is, of course, punctuated by writers who suffered from depression sometimes ending, sadly, in suicide. However, there may well have been factors responsible for the negative aspects of their lives that were in no way related to their writing skills and imagination. In the context of contemporary, organizational creativity research, there are few researchers that disagree with the relationship between positive affect and creative performance (Wright & Walton, 2003). Under nearly all circumstances being happy and increased creativity seem to go hand in hand. As yet, though, it is undetermined whether being creative causes happiness or whether being happy enables the psyche to think in a more boundaryless and divergent way, thus being more able to connect diverse facts. Either way, a happy workplace is more likely to be a creative one!

Author's Brief Bio

André Walton is the founder of organizational consultants, Creative Paths, André Walton was a serial entrepreneur for over 20 years before gaining his Ph.D. in social psychology. André won several prestigious awards for his achievements in the areas of innovation, small business development and export marketing and is now the Visiting Fellow of Creativity and Entrepreneurship at the University of South Wales (Newport Business School). Based both in Nevada and Portugal, Creative Paths services clients in Europe and the US with an emphasis on change management and stimulating creativity and innovation at the organizational level. André developed the notion of Spherical Thinking and also the Self versus Group model of Creativity. André works extensively in the area of psychometrics, survey research and statistical analysis, and has been an active researcher in the field of social psychology and law. He is a consultant for the National Judicial College and teaches Master's Degree classes in Managing with Creativity, and, Business Communications, for the University of Nevada, Reno, via the internet. André is also a keen musician and plays jazz flute for his ensemble in the Algarve. andre@unr.edu

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8 ANNA WALKER AND MARK BATEY

TAKING A MULTILEVEL APPROACH TO CREATIVITY AND INNOVATION

ABSTRACT This chapter defines key areas, presents important issues around multilevel research, presents theoretical and empirical multilevel research findings and finishes with recommendations for researchers, practitioners and managers.

Introduction

Creativity and innovation are perhaps the most vital of all human resources. Creativity lies at the heart of finding new and useful ways of doings things. Innovation, be it in an organisation or society, is central to ensuring that creative ideas and concepts become products, processes and services of value. Due to the centrality of creativity and innovation, researchers and practitioners have long wanted to understand these constructs better. Early studies focused on the individual (e.g. Guilford, 1950) with attention then turning to team and organisational factors (e.g. Anderson, De Dreu and Nijstad, 2004). These individual, team and organisational factors were usually studied in isolation. Recent statistics and computational modelling advances allow these factors to be considered more holistically. That is, a multilevel approach.

Definitions, Key Considerations and Benefits of Multilevel Research

There is some confusion as to what constitutes a multilevel approach (Costa, Graca, Marques-Quinteiro, Santos, Caetano & Passos, 2013). Typically, the term 'multilevel' is used to denote a phenomenon with two or more levels.

Multilevel research is conducted when investigating the relationships between variables characterising lower levels, such as individuals, and higher-level variables, such as groups or teams. In much organisational research, level one (micro level), refers to individual variables, level two (meso level) refers to team variables and level three (macro level) refers to organisational variables (Kozwolski & Klein, 2000). Multilevel conceptualisations commonly refer to hierarchical 'nesting' or 'clustering' of levels. For example, individuals are nested within a team, which is in turn nested within an organisation (Nielsen, 2010). A multilevel approach allows a more integrated understanding of phenomena that unfold across levels in organisations.

Creativity may be considered the attribute of a person or persons, a process, an environmental variable or refer to the properties of a product (Batey, 2012). Plucker, Beghetto, and Dow (2004) define creativity as "the interaction among aptitude, process, and environment by which an individual or group produces a perceptible product that is

both novel and useful as defined within a social context" (p.90). Whilst there is some evidence that this definition of creativity is gaining acceptance amongst the creativity research community (Baer & Kaufman, 2005), few studies measure creativity in accordance with this definition. This lack of synergy between how creativity is defined and measured can make the interpretation of the findings from different studies problematic.

Innovation may be defined as "the multi-stage process whereby organisations transform ideas into new or improved products, service or processes, in order to advance, compete and differentiate themselves successfully in their marketplace" (p.1334, Baregheh, Rowley & Sambrook, 2009). Whilst this carefully constructed definition has been used in a number of studies (e.g. Baregheh, Rowley, Sambrook & Davies, 2012), the majority of innovation publications continue to use diverging definitions of innovation. This hinders meaningful discussion about innovation, especially across disciplines.

Much has been written about the nature and types of multilevel research. While it is outside the scope of this chapter to provide a thorough exposition of these issues, it is appropriate to address the fundamental consideration regarding whether a model is top-down or bottom-up in orientation.

Bottom-up multilevel models focus on the effects of a lower-level variable on a higher-level variable, such as the effects an individual has on their team. Top-down multilevel models focus on the effects of a higher-level variable on lower-level variables. For example, the effect organizational climate has on an individual employee. Whilst many models do not explicitly state whether they are bottom-up or top-down, the majority of multilevel models are top-down (Kozwolski & Klein, 2000).

Once a model has been determined as bottom-up or top-down in nature, there are further fundamental considerations to take into account.

Bottom-up models attempt to describe how lower-level constructs emerge to form higher-level phenomena. Emergence can be in terms of a composition model or a compilation model. In composition models, the phenomena observed in the lower-level remains fundamentally the same when observed at the higher level. For example, organizational climate emerges compositionally, because an individual's perception of climate at the micro level is in effect the same as the macro manifestation of climate at the organizational level, where many individual perceptions are aggregated. Compilation models examine phenomena that are similar, but not identical when observed at different levels. Team creativity is compilational, because it is not simply the aggregation of individual creativity. The distinction between whether a model is compilational or compositional is not necessarily always clear, and sometimes a construct may be either.

There are three types of top-down multilevel models (Klein & Kozwolski 2000). First, direct effects models. These predict the direct effect of higher-level variables on a lower-level variable. For example, the effect of organizational climate on individual creativity. Second, moderator models suggest that the relationship between two variables at the same level, such as individual creativity and individual creative self-efficacy, are moderated by a higher-level variable, such as organizational climate. Third, frog pond models show the complex interactions between lower and higher-level variables. For example, a frog pond model could show the effect of individual creativity on team creative performance, relative to the creativity of each member of the team.

There are benefits to be gained from the adoption of a multilevel research paradigm. First, combining micro and macro levels in research allows for a more integrated and holistic

understanding of the interplay between complex variables that cannot be yielded from single level research (Nielsen, 2010), and can make for more accurate estimates of variance (Brass, 2000).

Second, multilevel research increases the level of application-relevance, as it allows managers and practitioners to make conclusions based on the appropriate level of analysis (Kozwolski & Klein, 2000). For example decisions about the most appropriate approach to take for an individual can be derived from individual level data, while decisions about teams can be taken from team level data. This avoids the danger of extrapolating to the level of the team on the basis of individual level data.

Given that creativity and innovation are complex phenomena that operate at the level of the individual, team and organization, they would appear to be perfect candidates for multilevel research (Anderson et al., 2004).

Despite evidence of increasing consensus as to how creativity and innovation should be defined, in practice multilevel research often fails to start with unequivocal definition. As a result, inconsistent definition leads to inconsistent measurement, which leads to inconsistent findings. Similarly, despite it being possible to identify a multilevel model as top-down or bottom up, compilational or compositional, or as assessing direct effects, mediational effects or take a frog pond perspective, rarely do multilevel models in creativity and innovation research provide this level of clarity.

This chapter will now summarise theoretical and empirical work on multilevel models of creativity and innovation and provide guidance for studying creativity and innovation through a multilevel lens.

Multilevel Models of Creativity and Innovation

In order to follow a rigorous methodology for the review of multilevel models of creativity and innovation for this chapter, inclusion criteria were formulated. To be included in this chapter, a multilevel model had to include two or more levels, and be drawn from the psychological or management literature. The primary focus is to review models that give serious consideration to the relationships between levels. Brief reference will be made to models that focus on a single level but allude to relationships with other levels.

Theoretical Multilevel Models of Creativity and Innovation

Early theoretical multilevel models of creativity were expanded from models that sought to explain individual creativity, often with reference to situational variables (e.g. Ford, 1996; Mumford & Gustafson, 1988; Woodman & Schoenfeldt, 1990). The first multilevel model of creativity was developed by Woodman, Sawyer and Griffin (1993).

The authors contend that "an understanding of organizational creativity will necessarily involve understanding (a) the creative process, (b) the creative product, (c) the creative person, (d) the creative situation, and (e) the way in which each of these components interacts with the others" (p. 294). This still holds true for multilevel models of creativity and innovation, and accords with attempts to provide a comprehensive and parsimonious coverage of creativity measurement (Batey, 2012).

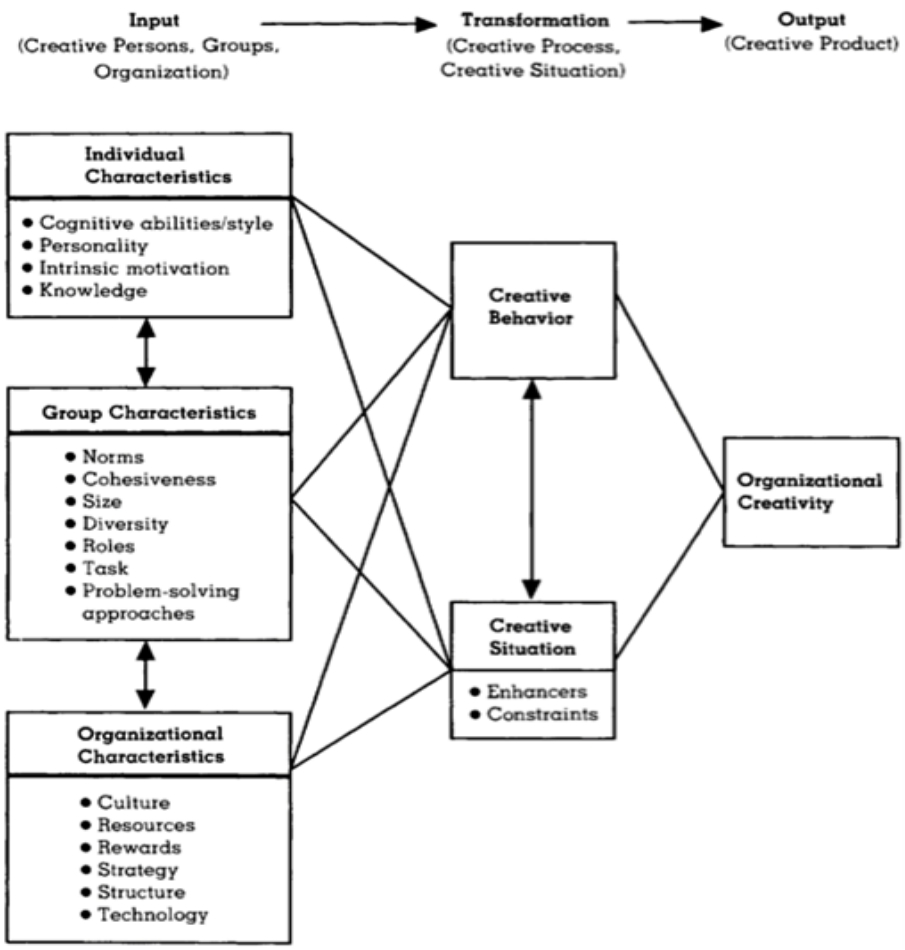

Figure 1: Interactionist Model of Organizational Creativity from Woodman, Sawyer & Griffin (1993, p. 309).

Woodman, Sawyer and Griffin (1993) proposed that a combination of specific individual difference antecedents lead to individual creativity, which interact with group characteristics, and then interact with organizational characteristics (c.f. Figure 1). Together these individual, group and organizational characteristics interact to produce creative behavior and the creative situation, which in turn lead to a creative product. In effect this model recognizes the nesting of individual factors within group factors within organizational factors, and that the interactions between the levels are not unidirectional.

The multilevel model of Woodman et al. (1993) accords with the definition of creativity outlined at the beginning of this chapter and each part of the interactionist model lists a specific characteristic which means the model could be measured and tested empirically. However, an empirical test has yet to be conducted.

It is beyond the scope of this review to closely examine models only pertaining to individual creativity. However, Ford (1996) in his model of Individual Creative Action in Multiple Social Domains does briefly highlight the interplay between Groups, Organizations, Institutional Environments and Markets. Similarly, the Propulsion Model of Creativity proposed by Sternberg, Kaufman and Pretz (2002) conceptualized how different types of

creative products influence domains. The model also briefly explored common individual difference traits related to creative performance. Lastly, Drazin, Glynn, and Kazanjian (1999) produced a model of creativity which they termed 'multilevel', but it does not fulfill the inclusion criteria for this chapter. The model considers the role of time in the development of creative products, which is an area often overlooked.

Csikszentmihalyi (1999) hypothesized that creativity exists in the interaction between the individual, domain and field (c.f. Figure 2). An individual draws information from a domain and alters the information by using their cognitive processes, motivation and personality traits. The field, consisting of people who can influence or act as "gatekeepers" of a domain (e.g. academic journal editors, scientists who conduct peer-reviews), evaluate and promote or discourage new ideas. The domain in turn preserves creative contributions and selects which ideas are passed onto other members of the field. As yet, there have been no empirical investigations of the theory. Further, from a practitioners' perspective, the model does not provide significant insight regarding how best to develop creativity.

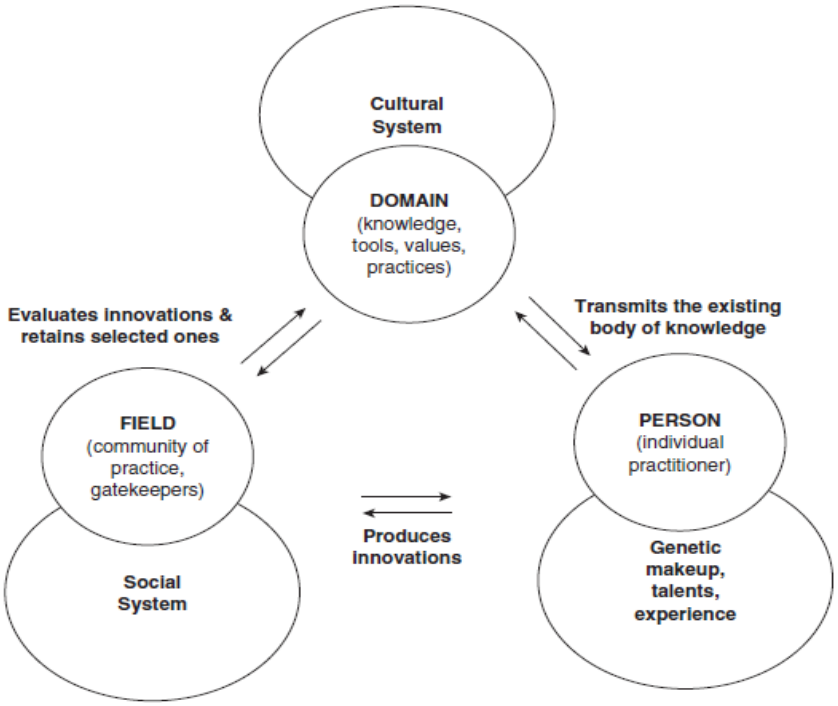

Figure 2: The Systems Model of Creativity, from Csikszentmihalyi (1999)

In their review of the creativity literature from 1998 to 2008, Hennessey and Amabile (2010) concluded that a systems perspective was necessary to understand creativity. Though simplistic, the representation of creativity shown in figure 3 illustrates the nested multiple levels of creativity, starting with intra-individual creative processes relating to neurology and cognition.

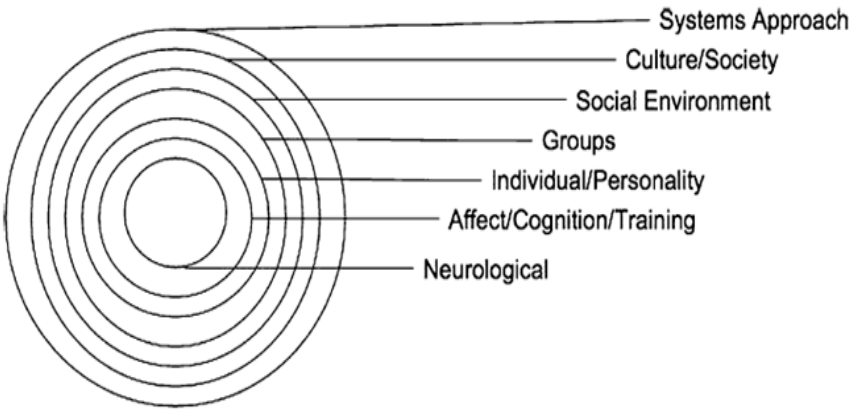

Figure 3: A simple systemic model of creativity, from Hennessey & Amabile (2010).

The model proposed by Hennessey and Amabile (2010) is broad and comprehensive. However, the relationships between the levels, the order in which the levels are nested and discriminant validity between each level has not been subjected to empirical investigation.

Sears and Baba (2011) proposed a recent theoretical multilevel model (c.f. figure 4). For this model, the authors adopt language pertaining to innovation rather than creativity, although there is little discernible difference between how the terms are employed.

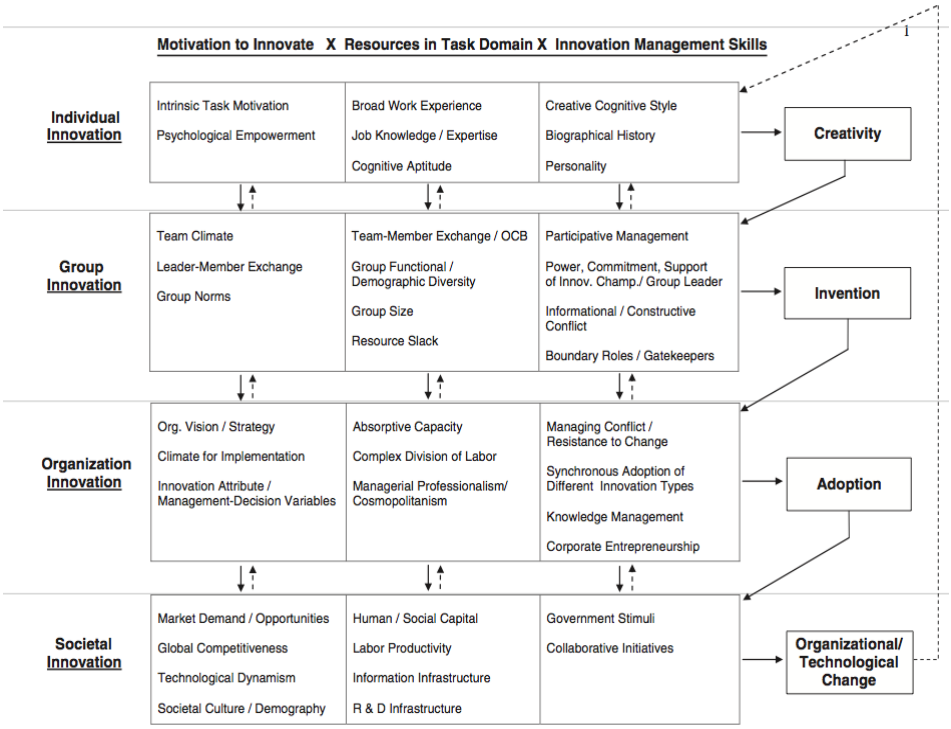

Figure 4: Four level innovation model proposed by Sears and Baba (2011), p4

In addition to modeling innovation at the individual, team and organizational levels, Sears and Baba (2011) introduce a fourth level - societal innovation. This acknowledges the impact of higher-level innovation drivers. Like the Propulsion Model of Creativity (Sternberg et al., 2002), this model outlines how the progression through the levels of individual to societal innovation leads to creativity, invention, adoption and change. Sears and Baba's (2011) model highlights the continued interest in a multilevel approach, and, crucially, exemplifies the lack of progression. Multilevel models are still rarely empirically tested.

Batey (2012) presented a multilevel model for the measurement of creativity. This framework synthesized previous efforts to develop taxonomies of creativity measurement, resulting in a three-dimensional matrix. The three axes are concerned with levels, facets and measurement approach (c.f. figure 5).

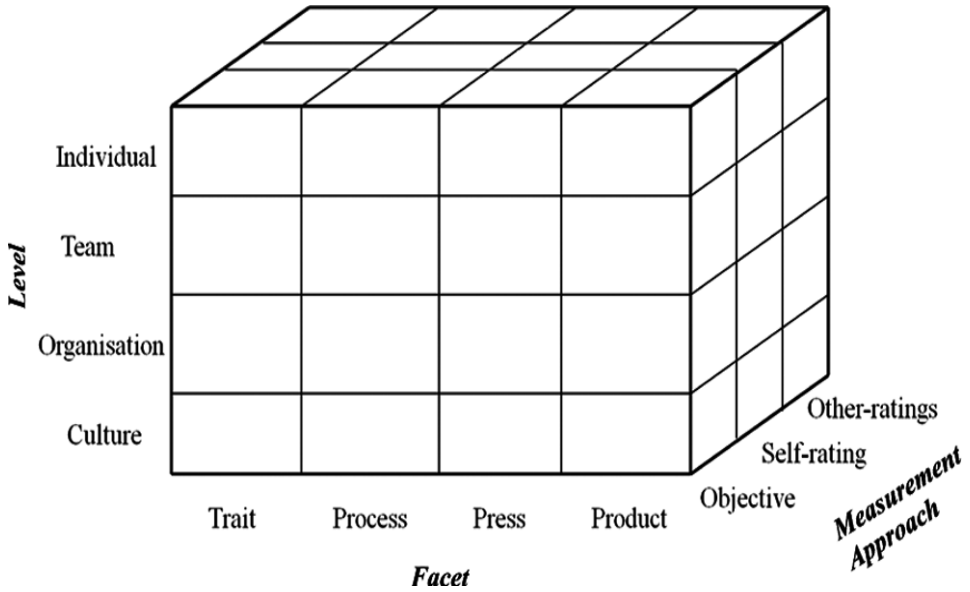

Figure 5: Multilevel model for the measurement of creativity proposed by Batey (2012), p59

The level of creativity is concerned with who is the focal point of analysis, broken down into four categories: individual, team, organization, and (national, regional or societal) culture. The facet of creativity is concerned with what is to be analyzed. This comprises four categories approximately corresponding to the 4Ps approach (Rhodes, 1987); trait characteristics (person), process, press, and product. The measurement approach concerns how creativity is to be assessed. Measurement may be objective (e.g., hard data), subjective in the form of ratings provided by the focal point of analysis (e.g., an individual or team), or subjective and external to the focal point of analysis (e.g., subject matter experts, judges, etc.).

The benefits of this multilevel measurement model is that it has broad coverage, considering who is going to be measured, what is going to be measured about them and how that measurement may be conducted. However, the model has not been used empirically.

The fundamental aspects of each theoretical multilevel model of creativity and innovation are presented in table 1.

Author	Model name	Main focus	Key definitions	Individual level constructs	Team level constructs	Organisational level constructs	Main criticisms
Woodman, Sawyer & Griffin (1993)	Interactionist model of organizational creativity	Predicting creative outcomes	Creativity = "creation of a valuable, useful new product, service, idea, procedure or process by individuals working together in a complex social system" p.293	Cognitive style, knowledge, personality, intrinsic motivation	Group composition, group characteristics, group processes	No direct constructs - contextual influence mentioned	No clear operationalisation of creative outcomes. No differentiation of creativity and innovation. No consideration of effects of leadership or climate
Csikszentmihalyi (1999)	Systems model of creativity	The interaction between individual, domain and field	Creativity = an idea, act or product that changes an existing domain, or transforms an existing domain into a new one	Genes, talents, experience	Not team but 'domain'. Domain is community of practice, gatekeepers	Not organizational, but 'cultural system'. Cultural systems is knowledge, tools, values, practices	Not specific to organisational creativity and innovation. Difficult to apply practically. No empirical investigation
Hennessey & Amabile (2010)	Systemic model of creativity	Creativity	Creativity= "the generation of products or ideas that are both novel and appropriate" (p.570)	Neurological, emotion, cognition, training, personality	Groups	Environment, culture, society	Not specific to organisational creativity. No discrimination between team and group level
Sears & Baba (2011)	Multilevel model of innovation	Innovation	No specific definitions. View innovation as process not an outcome	Intrinsic motivation, work experience, knowledge, cognitive aptitude, cognitive style, biographical history, personality	Team climate, leader-member exchange, group norms, team member exchange, diversity, size, resources, participative management, team leader support, constructive conflict, boundary roles	Organisational strategy, implementation climate, absorptive capacity, division of labour, diversity, resistance to change, knowledge management, synchronous adoption of different innovation types, corporate entrepreneurship	No empirical support
Batey (2012)	Heuristic framework for creativity measurement	Measuring creativity	Creativity = "the interaction among aptitude, process and environment by which an individual or group produces a perceptible product that is both novel and useful as defined within a social context" (Plucker et al., 2004 p.90)	Facets: trait, process, press, product. Measurement approach: Objective, self-rating, other-ratings	Facets: trait, process, press, product. Measurement approach: Objective, self-rating, other-ratings	Facets: trait, process, press, product. Measurement approach: Objective, self-rating, other-ratings	Focused on measurement, not theoretical

Table 1: Fundamental Aspects of Theoretical Multilevel Models of Creativity and Innovation

The different theoretical multilevel models of creativity and innovation share fundamental features. Many consider individual, team and organizational level factors. There is also convergence regarding some of the key individual (e.g. personality) and team level factors (e.g. group diversity). However, there is also divergence across the models.

These different models arguably provide a broad and helpful multilevel visualization of creativity and innovation. However, the purpose of the models has rarely been to comprehensively inform individual or leadership behaviour, and even less to inform management processes and practices. To move beyond hypothetical representations of creativity and innovation more precise and empirically tested models are required. However, we will see that empirical efforts are inconsistent in approach, rarely reference the theoretical models we have presented and seldom measure creativity or innovation in accordance with the definitions presented earlier.

Empirical Multilevel Models of Creativity and Innovation

Despite increased publication of multilevel work in recent years (Costa et al., 2013), most organizational research still occurs at the individual level. Where there is empirical multilevel research on creativity and innovation, there is little consistency in terms of approach, methodologies and measures. Further, the empirical research does not stem from theoretical multilevel models. These issues make consolidating existing research into a parsimonious account problematic. In an effort to provide systematization to the presentation of the empirical multilevel models of creativity and innovation, we present the studies under three broad categories: studies that focus on the individual, studies that focus on teams, and studies that focus on organizational level factors.

Empirical Multilevel Models with an Individual Focus

The individual approach is the most common paradigm in creativity research (Batey & Furnham, 2006). Hirst, van Knippenberg and Zhou (2009) studied 198 employees nested within 25 R&D teams from a single multinational pharmaceutical organization, and found that there was a weak positive relationship between an individuals' learning orientation (a preference for learning and taking on new challenges) and supervisory ratings of individual creative problem solving. The authors found that the extent to which the team had high levels of team learning behaviors strengthened the relationship between individual learning orientation and individual creativity. That is, when the team context is supportive of learning, individual learning orientation leads to higher individual creativity.

Richter, Hirst, van Knippenberg and Baer (2012) studied 176 employees in 34 R&D teams in a single multinational organization, examining the relationship between individual creative self efficacy (belief in their ability to produce creative outcomes) and supervisor-rated individual creativity. They also explored how team level processes mediated this relationship. It was found that team members 'Knowledge of Who Knows What' and team diversity (regarding professional specialism) mediated the relationship between creative self-efficacy and creativity. That is, team members are rated as more creative when they have self-belief in their creativity, they know what their other team members do and they work within a professionally diverse team.

Yoshida, Sendjaya, Hirst and Cooper (2013), studied 154 teams and found that individual creative performance, as assessed by managerial ratings, was highest when team mem-

bers felt a close relationship to their leader and in the presence of a supportive climate for team creativity. This indicates that individual creative performance is part of a complex system that includes leadership behaviors and team climate.

Sung, Cho & Choi (2011) conducted a longitudinal study via 40 executive interviews in a large Korean consumer products company to explore who is involved in the adoption and implementation stages of the innovation process, in a sample of 94 innovations. It was found that the employees who played major roles in encouraging the organization to adopt an innovation would also remain heavily involved in the implementation of the innovation, as employee-driven implementation was moderately and significantly correlated with employee-driven adoption. That is, individuals interact with different organizational innovation processes to influence the success of innovation. It may be argued that this study is not multilevel, as the relationships between levels were not subject to quantitative analyses.

These individually-focused empirical multilevel studies demonstrate that individual creativity does not occur in a vacuum. Rather, individual creativity unfolds within a complex system that includes the team and environment.

Empirical Multilevel Models with a Team Focus

Although much of the empirical multilevel research has focused on the individual, some studies have focused at the team level. Taggar (2002) studied individual and group creativity processes by asking 94 groups, comprised of 480 undergraduate students, to complete one 'management case study' task each week over a period of thirteen weeks, including decision making, generating options, or devising evaluation criteria. An external judge rated each group's report on their task workings and proposed solution. This rating provided the measure of group creativity. Each group member also rated the creativity of their other group members. Taggar (2002) found that domain knowledge and performance-relevant behaviours moderately and significantly related to individual personality traits (Extraversion, Conscientiousness, Agreeableness). The study also demonstrated that creative performance at the team level was not simply the aggregation of individual creativity. That is, team creativity is more than just the sum of individual creative parts. There is a unique contribution relating to team composition, behavior and dynamics.

Mohamed (2002) explored organization and team level antecedents of team innovation with a sample of 902 individuals from 150 teams from governmental departments within the United Arab Emirates. Team innovation was measured by self-reported engagement in the adoption of service, process, administrative, operational and system innovations. A number of antecedents were found to lead to higher levels of team innovation. Specifically, group satisfaction, positive managerial attitudes and decentralization all had positive moderate significant relationships with innovation, while diversity was weakly correlated with innovation. This study was not without limitations, in particular the measurement of innovation as adoption was esoteric and the two new scales devised for this study (group satisfaction and decentralization) were not subjected to rigorous analyses to determine their robustness.

Chen, Farh, Campbell-Bush, Wu and Wu (2013) focused on the role of team support for innovation, individual and team innovation performance and individual motivation in promoting innovation in a sample of 428 individuals in 95 R&D teams from 33 Chinese organisations across various industries. They found that perceived team support for innova-

tion climate was weakly, positively and significantly related to increased individual innovation performance as rated by the team leader. This led to increased team innovation performance as rated by a manager. Importantly, the relationship between individual innovation performance and team innovation performance demonstrated only a weak positive significant relationship. This indicated that team creative performance is not simply the aggregate of individual innovation performance. Instead, the positive, facilitating supportive team climate has a significant impact. This study also examined the relationship between team support for innovation and individual innovation performance. It was found that the pathway between team support for innovation and individual innovation performance was partially mediated by individual intrinsic motivation and role breadth efficacy (perceived capability of carrying out a broader set of work tasks extending beyond prescribed technical requirements). This indicates that team support for creativity is important for individual innovation performance, but that individual characteristics relating to intrinsic motivation and self-efficacy are influential components in the complex system of creativity that incorporates individual and team antecedents.

These team-focused empirical multilevel studies demonstrate some of the complex interactions between individual, team and organization. Given the divergence in methods and approaches adopted in these studies, it is not possible to draw firm conclusions.

Empirical Multilevel Models with a Focus on Management Practices and Organizational Level Factors

This section outlines multilevel studies that have examined management and HR practices, in addition to organizational factors like climate and culture. It is beyond the scope of this chapter to examine leadership studies.Instead of looking at what encourages creativity, what constrains individual creativity has also been explored taking a multilevel approach. Hirst, van Knippenberg, Chen and Sacramento (2011) studied 330 individuals in 95 teams in the Taiwan Customs Bureau, examining the impact of two aspects of managerial processes relating to bureaucracy (centralization and formalization) on individual creativity, as assessed by supervisory ratings. Centralization, where leaders adopt a centralized decision-making role, had a weak, significant negative relationship to creativity, whilst formalization, where there are high levels of bureaucracy, had a weak, significant negative relationship to creativity. The authors concluded that the findings from the study are inconclusive, due to the weak correlations observed.

Un (2010) examined responses of team members involved in 202 product innovation projects in 42 large American technology firms to explore the impact of different organizational level and team level management practices on the team's ability produce incremental or radical innovations. The study used a sample of only 42, single item measurement and provided no clear rationale for how variables were entered into a regression. Taking these limitations into account "among the practices, career development appears to have the largest positive effect on radical innovations, while joint performance-based compensation appears to have a larger influence on incremental innovations than the other two practices" (p.12).

Ritala, Armila and Blomqvist (2009) interviewed 20 managers across various industries to explore the impact of individual and organizational antecedents on an organization's orchestration capacity, i.e. "the capability to purposefully build and manage inter-firm innovation networks" (p.570); the extent to which an organization has the capacity to initiate

and manage open, fluent and flexible communications between actors within innovation networks. Innovation orchestration capability has both individual and organizational level determinants. At the individual level, influencing, motivating and interpersonal skills help organizations to build networks for innovation and at the organisational level the climate should be collaborative, entrepreneurial and able to influence and envision the future.

If it proved challenging to provide a coherent conclusion to the 'team-focused' empirical section, the task is even harder for this section on managerial processes and organizational level factors. The three studies outlined here were methodologically and conceptually distinct. One study had inconclusive findings, another adopted an unusual design. Therefore, the only reasonable conclusion to this section is that more research is required.

The different empirical multilevel models of creativity and innovation defy simple summary. There have been a host of different approaches adopted. The divergence can be seen in whether the focus is more on creativity or innovation, whether the primary focus of the research may be considered individual, team or organizational, how creativity or innovation has been measured and which antecedent factors are considered. In short, there is no single strand or theme to emerge from the empirical multilevel research.

Summary, Conclusion and Recommendations

A defining characteristic to emerge from this examination of multilevel models of creativity and innovation is confusion. Confusion as to how creativity and innovation should be defined, measured, operationalized and interpreted, confusion as to how to apply multilevel model considerations to creativity and innovation research. While there is some overlap between elements of the theoretical models, confusion still abounds when comparing and contrasting the theoretical models. The picture for the empirical multilevel models is even more unclear. There is no way to parsimoniously draw together the findings from the different studies, as a broad overview or overarching framework is lacking. However the empirical nature of the studies begin to suggest specific recommendation at the individual, team and organizational level. Moreover, it is clear that the adoption of a multilevel paradigm has enabled researchers to take a more holistic view than was possible by focusing solely on one level. We now turn to practical considerations for researchers and practitioners.

When planning a multilevel research study there are a number of considerations for researchers. First, what constructs to focus on, and how will these be defined and measured? The fields of creativity and innovation both contain definitional inconsistencies. Definitions should be drawn from existing theoretical models and empirical research wherever possible. Measurement approach should be closely related to construct definition. Unique to multilevel research is the consideration of sample size at each level of analysis. Whilst a sample may be large at the individual level, if team level analyses are desired then the sample size should be appropriate for aggregating to the team level, or when individual level data is divided by team.

Second, the researcher should consider their statistical approach. Existing research has favoured either hierarchical linear modeling (HLM) or multilevel structural equation modeling (MSEM).

There are a number of considerations for practitioners and managers when interpreting and implementing multilevel research. First, consider that some relationships between variables may be overstated when research is summarised. Second, the effect sizes reported are often relatively small. This means that whilst those constructs may be significantly related, the power and importance of the relationships may be lower than it initially appears.

Third, consider that studies are often focused on a few countries and industries, limiting generalizability.

Overall, if creativity is the most fundamental of all human resources and innovation is vital to ensure that creative ideas are realised, then it is fundamental to be able to define, measure and operationalize these constructs. Whilst much progress has been made since the earliest studies, there is still more to be achieved. A multilevel approach currently offers the best promise of a holistic understanding of creativity and innovation.

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Authors' Brief Bio

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9 STEVE HALLIDAY & BEN P. FRASER

MYSTERY, SURPRISE, AND DISCOVERY: THE NEGLECTED POWER OF INDIRECT COMMUNICATION

ABSTRACT Indirect communication often outperforms and achieves deeper and longer-lasting results than does direct communication, especially when the intended audience might be expected to resist at least some portion of the proposed message. While direct communication generally focuses on the cognitive abilities of a target audience, indirect communication tends to focus instead on the imagination and the will. This chapter explores the chief differences between direct and indirect communication, identifies when and in what contexts indirect communication functions especially well in business environments, and suggests several creative possibilities in those contexts for conveying potent, effective messages through indirect communication.

Introduction

Although the National Football League's Baltimore Ravens won the football portion of Super Bowl XLVII, a cookie won the day's online marketing contest. And it didn't do so by saying, "Buy me if you're hungry."

When a power outage interrupted the 2013 game for more than half an hour, marketers working for Oreo saw an opportunity. The company's fifteen-person social media team, comprised of copywriters, a strategist, and artists, quickly prepared and posted a clever ad on Twitter that almost instantly went viral. "Power out?" the ad asked. "No Problem." The ad showed a barely-lit Oreo sandwich cookie along with the caption, "You can still dunk in the dark."

The ad quickly garnered nearly 15,000 retweets, and since an average Twitter account has around 200 followers, that could mean some three million viewers saw the ad within moments of its appearance (Cameron, 2013).

The president of the digital marketing firm that directed Oreo's effort declared, "Once the blackout happened, no one was distracted—there was nothing going on. The combination of speed and cultural relevance propelled it to the forefront" (Watercutter, 2013). *Wired* magazine noted that traditional advertisers paid nearly $4 million to run a single commercial during the game, so "having a brand respond in real-time on social media is a clever way to reach people on smartphones and computers—particularly when a survey prior to the game found that about 36 percent of Super Bowl viewers would be consulting a second screen" (Watercutter, 2013). And Jonah Berger, author of the 2013 book *Contagious: Why Things Catch On*, noted, "The Super Bowl channel is very saturated. I think a retweet is much more engaged, it is suggesting that the audience is not only processing this message but actively engaging with the message and selecting the message to pass on to

their friends. That said, is this going to sell more Oreos at the end of the day? Hard to tell. [But] it definitely makes the brand seem like a more clever, more interesting, sharp brand. So in terms of brand equity this is as effective, if not more effective, than just showing another Super Bowl ad" (Watercutter, 2013).

Through a creative and artful use of indirect communication, the cookie company bested its competitors. In tribute to the clever effort, *Wired* congratulated Oreo with a memorable line of its own: "In other words, touchdown: Oreo" (Watercutter, 2013).

Direct vs. Indirect Communication

Many businesses pride themselves on making their communications direct, clear, forthright, and to the point, whether with their customers or within the company. They try hard to cultivate a reputation as "straight shooters" who will "tell it like it is." And very often, such clear, direct communication works very well.

Until it doesn't.

In such cases, indirect communication often works more effectively and achieves deeper and longer-lasting results than direct communication. So what are the chief differences between direct and indirect communication? When and in what contexts does indirect communication function well in business environments? And what does such indirect communication look like in practice?

Direct communication

Direct communication excels at transmitting information, facts, and objective content through what might be called "blunt talk" or "straight shooting." It generally focuses on the cognitive abilities of the individual for whom the communication is intended, targeting the mind rather than the imagination or the will. Messages communicated in this mode often are effective to the degree that the speaker's position of authority is accepted.

This means that if the primary reason for some communication is the dispensing of information, then direct communication is probably the most effective strategy. When an individual doesn't know some necessary fact or datum, then direct communication usually is the best option. If a fire breaks out in a building, for example, the endangered inhabitants don't need a story about flames; they need to know how to immediately evacuate the burning structure. They need facts and clear instructions, not riddles or mysterious statements.

Indirect communication

The strength of indirect communication comes not in relaying new facts, but in helping individuals to grasp some truth they might erroneously believe they already understand. It therefore does not focus on conveying additional information, but rather seeks to overcome some hindrance to a better comprehension of information already conveyed.

If direct information targets the mind, then indirect communication focuses on the imagination and the will. Therefore it hints, insinuates, and suggests rather than speaks bluntly. To be effective, it must be artful in its use of various communicative devices, such as humor, ambiguity, fictional narratives, imaginative constructions, and concealment.

Indirect communication is designed to arrest attention and prompt hearers to change how they think about something. It uses "riddles" or "dark sayings" to provoke hearers to

embrace some idea or take action on some product. It tries to make the familiar strange in order to unsettle the hearer and prompt him or her to actively reflect on the implications and ramifications of accepting some concept, especially for his or her own life.

In indirect communication, an effective message does not depend on the speaker's authority; instead, hearers discover or "give birth" to meaning on their own. Indirect communication fosters an active, discovery kind of learning and therefore doesn't explicitly say (at least at first) what the speaker wants the hearer to learn or do—which means it also tends to be more susceptible to misunderstanding or confusion than direct communication. It is connotative rather than denotative. It provokes thought or reflection so that the hearer is actively engaged in making sense of the product or idea and deciding on his or her own its value and what action to take.

The Danish philosopher Søren Kierkegaard illustrated the primary difference between direct and indirect communication when he imagined a man who had stuffed his face so full of food (a metaphor for "information") that he could not take in another morsel. The man was starving to death, but not for lack of food. The only way to help the dying man, Kierkegaard argued, was to take some food out of his mouth so that he could chew and swallow. The man didn't need more food; he needed a greater ability to profit from the food he already had.

In the same way, in some situations it does not help to provide more information to people who already have their mouths (or brains) full. They already have more than enough information; in fact, they cannot properly digest the information they already have. That is why it doesn't help simply to offer more information, and in fact, such a strategy can be counterproductive. People in this situation don't need more information, but a greater ability to understand the facts they already have and so to act appropriately upon that information. Indirect communication therefore does not seek to provide additional information so much as to prompt a new way of thinking about information already possessed.

When Is Indirect Communication Most Useful?

Indirect communication can be very useful when an audience resists some message, or when the audience believes it understands something that, in fact, it doesn't. The strategy works in part by preventing an audience from "arming its defenses" against an unwelcome message. Indirect communication thus may be an effective strategy when members of an audience want to obscure some truth that the communicator wants to bring to light or when the audience is emotionally ill-disposed toward some message.

Second, indirect communication may work well when an audience already has enough information to act wisely, but for some reason has chosen instead simply to amass more information. Indirect communication, creatively presented, can prompt an audience to take action when merely giving that same audience additional data will lead only to continued inaction.

Third, indirect communication may work well to raise awareness around an issue that otherwise would tend to remain in the shadows. Creatively designed indirect communication can command attention when the plain-spoken methods of direct communication get persistently ignored.

In what business contexts, then, might it make sense to develop an indirect message for an audience rather than a direct one? Consider a few possible scenarios (think of the list as suggestive rather than exhaustive):

- *Difficult employee reviews.*
- *Change of company vision/ownership/leadership.*
- *Delivery of bad news.*
- *Crucial commercial advertisements in a crowded market.*
- *Rebuilding trust after a challenging episode.*
- *Repairing a damaged corporate image.*

In each of these situations, some barrier likely must be overcome or some illusion has to be removed. Perhaps a valuable employee has resisted making some needed change described in a previous performance review, or a large product recall has damaged a company's reputation, or consumers have grown weary of and perhaps resistant to "normal" advertisements after a barrage of such messages (remember Oreo)? In such cases, the audience likely does not need more information, so much as an alternate way of perceiving the information it already has.

How It Works

Successful indirect communication generally has four key features that, working together, enable a message to get past some obstacle or overcome some illusion in order to bear fruit. The following does not lay out a sequential four-step process so much as it describes four key elements present in every successful attempt at indirect communication.

Grab attention. When you see resistance, either real or perceived, to you, your instructions, your company, or your product, then indirect communication can be a very useful strategy. A "frontal assault" that utilizes direct communication typically has little chance of success with an audience that resists your message.

Suppose that a manager must give a valued subordinate a negative review in regard to some specific aspect of the employee's work—and not for the first time. For whatever reason, the subordinate has consistently resisted making the required change; and while the manager does not want to lose the employee, the change must occur. Indirect communication can often work better than direct communication in such a challenging scenario.

Several years ago, an acquaintance who often served as a business consultant got involved in just such a situation. A small corporation had asked him to spend a few days onsite, and while there, he got recruited to intercede with a manager who, contrary to many instructions and pleas from colleagues, continued to work such long hours that he was having an overall negative effect on the company. Decades before, the consultant and the manager had enjoyed a teacher-student relationship, so each knew the other quite well. The consultant agreed to speak to the man.

One day as the pair drove to a work site, the consultant turned to the manager and said, "Bill, I noticed that you don't smoke." The deeply religious manager, very puzzled, replied, "Well, no . . . of course not." The consultant merely nodded his head.

A little later, the consultant said again, "Bill, I see that you really don't smoke." Bill turned to his mentor and answered, "No, I've already told you that." This time, the man's puzzlement nearly turned to irritation. And again the consultant said no more.

After the pair had inspected the site and returned to their car, the consultant turned to Bill and said, "Bill, you've told me twice that you don't smoke. May I ask, why not?"

"Honestly, Jim," the exasperated man said, "You know that I consider my body to be God's temple."

"Riiiight," his mentor answered, "so I suppose that's why you've been working 80 hour weeks, destroying yourself and driving everyone around you crazy?"

The message finally got through. Bill changed his behavior, enabling the company to regain its corporate health.

Do not immediately reveal your purpose. Indirect communication works largely through surprise and discovery, and that means the goal or purpose of the communication must remain hidden or cloaked, at least at first. The recipients of the message must first be coaxed into an inquisitive state, in which they consciously puzzle over the message, before any new discovery can occur. The communicator does not therefore explicitly or implicitly tell the audience what it is supposed to learn or decide. Aumann (2010), explains, "the indirect communicator does not tell the learner exactly what the outcome of the learning process is supposed to be. Instead, the indirect communicator provides the learner with a puzzle or problem that the learner must figure out for himself or herself" (p. 302). A recent event illustrates how this works.

The largest U.S. television audience of all time, estimated at 111.5 million viewers, tuned in to the 2014 Super Bowl, in which the Seattle Seahawks dismantled the Denver Broncos in the NFL's marquee event (Harnick, 2014). Twitter registered nearly 25 million tweets about the game, another record. One of those tweets, from the J.C. Penney company, left a vast number of observers scratching their heads. Soon after the game started, the company tweeted the following message:

> "Who kkmew theis was ghoing tob e a baweball ghamle. #lowsscorinh 5_0"
> About half an hour later, the company tweeted a second message:
> "Toughdown Seadawks! I sSeattle going toa runaway wit h this!!!"

The Twitter universe and the blogosphere almost immediately lit up, cynically wondering whether J.C. Penney had allowed an intoxicated fan to represent it on the Internet, or whether some hacker had taken control of its Twitter account in order to embarrass the company. Elis Isquith of *Salon* no doubt spoke for many when he wrote, "So, JC Penney's not really where most folks are going to get their Super Bowl commentary, but whoever's running things for the department store's Twitter account figured they might as well weigh in anyway. What could go wrong, right? Well, it's not quite an 'epic fail'—no racism, misogyny, or any other kind of ignorant bigotry—but it's still definitely fair to say this isn't how these tweets were intended to go out" (Isquith, 2014). Isquith then passed along some "friendly corporate teasing" from Kia Motors, which itself had tweeted, "Hey @jcpenney need a designated driver?" (Isquith, 2014).

A few minutes later, a J.C. Penney representative took to Twitter once more to post the following message: "Oops . . . Sorry for the typos. We were #TweetingWithMittens. Wasn't it supposed to be colder? Enjoy the game! #GoTeamUSA." The message included a photo of a pair of hands encased in mittens, trying to text on a smart phone.

Isquith soon updated his story to say, "JC Penney now says that mittens were to blame. . . Sure, JC Penney. Sure" (Isquith, 2014). The unconvinced *Salon* editor had skeptical company. The following day, Aimee Picchi for *Moneywatch* wrote an article titled "JC Penney's

Super Bowl Tweets Backfire." She called Penney's attempt to pique interest in its mittens "a head-scratcher" and wrote:

On the one hand, J.C. Penney managed to bring attention to a clothing item that generally doesn't make headlines. And the mixed-up tweets got people talking about the retailer and its social-media strategy, although the reception was a mixed bag of positive and negative views.

Still, that's a definite improvement from the past year, when headlines have focused on the company's declining sales, an ousted CEO and retailing mishaps (Picchi, 2014).

Picchi also quoted the official explanation given by J.C. Penney: "We knew Twitter would be very active but wanted to find a way to stay above the Super Bowl fray and instead create our own narrative" (Picchi, 2014). But what sort of narrative did the company actually create? Picchi concluded that generating "a unique narrative is nevertheless a far cry from Oreo's game stealing tweet [in 2013], which was both clear and clever. J.C. Penney's message appears to be, 'Don't type while wearing mittens.' That's not exactly a compelling reason to buy a pair" (Picchi, 2014).

The J.C. Penney Twitter episode illustrates clearly both the power and the limitations of indirect communication. Although the corporation's puzzling tweets generated a lot of attention (more than 20,000 retweets) and brought an instant media response, a large percentage of that attention probably cannot be considered corporately helpful. The most effective indirect communication usually has some clear connection between the initial "mystery" and the finally-revealed intent of the message. In the 2013 Oreo tweet, for example, the intended message is something like, "Oreos and milk are always a good treat, whether in the dark or in the light." The J.C. Penney's ad, however, had no such positive connection between its mittens and the game, and so many observers did not see the ad as clever or fun, but as merely odd.

The purpose of concealment in indirect communication, Aumann suggests, is to prevent the misdirected audience from realizing the final purpose of the communicator. The hope is that the communicator will thereby avoid setting off the audience's defense mechanisms and hence gain the opportunity to make the audience aware of something it would rather not consider. "If the communicator comes right out and announces the agenda," Aumann writes, "the audience will work against him or her. It will see the direct communicator coming and arm its defenses appropriately" (2010).

At the same time, however, the very nature of indirect communication makes it more open to varied interpretations. The mysterious nature of the message—required to bypass barriers or clear away illusions—means that the audience may not, in the end, understand or accept the message the communicator wished to convey. Genuine creativity is required to give the message its best chance at success; mere cleverness may succeed at getting a hearing for the message, but fail to secure a positive response to it.

Make the familiar strange. In a 1917 essay titled "Art as Technique," Viktor Shklovsky coined the term "defamiliarization" to refer to the literary process of making something very familiar seem quite unfamiliar, so that audiences could perceive the well-known thing in a fresh light (Rivkin and Ryan, 2004). To defamiliarize something does not mean to make it seem weird or completely alien, but rather to provoke an unexpected perspective on it that allows an audience to approach it in a new way, thus permitting new insights to take shape.

In a very similar way, one aim of indirect communication is to set an audience free of earlier perceptions and so to allow it to reevaluate some familiar situation and to make a

decision about that situation without previous entanglements, whether emotional or intellectual. To do this, indirect communication often tries to take something away before it can address the real issue. This "taking away" is a form of defamiliarization, of taking something familiar and reintroducing it in a new context and new way, so that it may become more acceptable.

Authors have long used a form of defamiliarization to gain a hearing for ideas that the general public or its thought leaders considered unacceptable. Jonathan Swift wrote *Gulliver's Travels* to critique the politics of his day, as did George Orwell many years later with his own *Animal Farm*. Many science fiction writers continue to use some form of defamiliarization, using imaginary alien worlds to comment on contemporary situations.

Advertisers frequently use a similar technique to gain a hearing for new or revised products. George Eastman, who invented an easy-to-use camera in the late 1800s, had to convince a skeptical public that his invention made taking pictures easy. To remove the illusion that taking photographs was a difficult and laborious process, as it always had been until then, he wrote a clear but indirect advertising slogan that set the bar for decades to come: "You press the button, we do the rest." Eastman didn't try to explain how his camera worked or how the Kodak differed mechanically from the complicated devices of his day; he simply defamiliarized the whole process of photography through one simple but potent line (Lindsay, 2006).

Steve Jobs and Apple Computers managed a similar feat more than a century later in the celebrated "Get a Mac" advertising campaign that ran from May 2006 to October 2009 (Nudd, 2011). To distinguish its computers from the more common and generally cheaper PCs, Apple did not trot out superior technical specifications or compare computing times or highlight other performance metrics. Instead, it featured two young adult males as personifications of the two kinds of computers: One, a pudgy, bespeckled, suit-wearing bumbler (the PC); the other, a slender, hip, informal, savvy ace (the Mac). Using humor, irony, clever comparisons highlighting the PC's shortcomings as opposed to the Mac's strengths—and perhaps, above all, a consistent, gentle tweaking of the PC's anthropomorphic nose—the campaign won a huge cultural following, as well as *Adweek*'s award as the best advertising campaign of the first decade of the twenty-first century.

The campaign also provided a master example of defamiliarization through advertising. The first time the two characters appeared on screen, in front of a white background lacking any special effects, viewers would have no way to know that the slender, hip young man represented the Mac while the pudgy, clueless fellow represented the PC. PC admirers had no visual or audio clues to suggest that the ads would, in fact, skewer their beloved machines. In addition, the two men talked to each other and not to the viewing audience, as if viewers overheard something not intended for them—another way to disarm defenses. The television ads did not present additional information so much as try to set a different tone for the debate between PCs and Macs. So did the ads work? Sixty-six television spots and many years later, *Adweek*, at least, answered with a resounding, "yes!"

Target the imagination, not the mind. One of the major goals of indirect communication is to gain an emotional and psychological foothold with an audience in order to get a fair hearing for some resisted message. Most of the time, this means focusing on creative ways to engage the imagination and the emotions, rather than on challenging the mind with new facts. It also means the audience will decide the issue for itself.

The indirect method always and deliberately leaves something out of the communicative activity, so that the recipients of the communication must complete the meaning of the

message on their own. This explains why the use of humor, questions, story, irony, satire, and other provocative devices are used to get the person involved in creating meaning. In this way, the communicating individual is seen primarily as an artist and a creative person. Meaning is not *provided* so much as *provoked*, in a setting that gives the audience the best chance to come to a fair conclusion.

In the mid-1980s, Iowa was languishing economically. Two state legislators hoped that a limited form of gambling might help improve their state's financial climate, and so proposed legislation to legalize it. The first time they tried, "nobody took them seriously" and one of the legislators said that people "literally laughed us out of town" (Duffy, 1997). Just a few years later, however, Iowa became the first Midwest state to sanction riverboat gambling. How did the tide turn so quickly?

Duffy undertook a "fantasy theme analysis" using principles developed in Symbolic Convergence Theory (SCT), a conceptual framework that "helps explain broad aspects of interpersonal, small group, public, organizational, mass, and intercultural communication" (Bormann et. al. 2001). SCT attempts to account for "those dramatizing, communicative processes that create and sustain a community" and seeks to explain "the development of shared fantasies that coalesce into a rhetorical vision (the shared symbolic ground exhibited by a vision's participants)" (Bormann et. al. 2001).

Duffy wanted to analyze how, in less than three years, proponents of riverboat gambling managed to overcome enormous opposition to the initiative in both the state legislature and in the Iowa populace at large. One major contributing factor, she concluded, was a well-financed and professionally-developed advertising campaign that glorified riverboat gambling's romantic connections with Mark Twain-era scenes.

The public relations strategy directed attention away from gambling and employed "considerable rhetorical artistry" to emphasize instead the scenic aspects of riverboats. The campaign spoke of "family floating theme parks" and consistently used terms such as "golden age" and "recreating Iowa's riverboat history" and the "festive atmosphere" on the boats, should the law pass. The PR blitz emphasized job creation, statewide economic benefits, and the opportunity to create tourist attractions that would showcase Iowa's history and cultural interests (Duffy, 1997).

The initiative's opponents, who emphasized the moral evils of gambling, received far less coverage in the state's media outlets and never did manage to create a consistent rhetorical theme that resonated with voters. In fact, proponents managed to paint them as "parochial, narrow-minded opponents of progress" (Duffy, 1997, p.128).

On April 27, 1989, Iowa's governor signed into law legislation that permitted riverboat gambling on the state's major river fronts. Five other Midwestern states soon followed suit (Anonymous, n.d.) A California-based developer and businessman, Frank Fried, had led the effort to allow riverboat gambling in Iowa. Early on, he and his company established a budget of approximately $50,000 for the public relations campaign, to be conducted by a six-person team (Duffy, 1997). Fried never profited from his investment, however, since financing for his company collapsed before he could turn his dreams into reality. A local developer instead worked with many of Fried's contacts to establish the first successful riverboat enterprise in Iowa, beginning those operations in April 1991 (Sturgeon, 2011).

Whatever economic benefit Iowa has actually received from riverboat gambling, indirect communication played a significant role in its legalization there. Through the artistic creation and dissemination of many positive, compelling images—none of which focused on

gambling, but instead painted a once-and-future vision laden with nostalgic and upbeat "fantasy themes"—an entire state that for decades had repudiated even a whiff of gambling, ended up championing its propagation throughout the Midwest.

A Potent Tool in Particular Circumstances

Of what use is indirect communication in business? Imagine an individual who suffers under the illusion that he understands something, simply because he knows many facts about it. But those facts cannot have a beneficial effect on his life so long as the illusion remains.

Direct communication has little chance of removing the illusion, since the individual's problem is not a lack of facts, but a misapprehension of them. The unique power of indirect communication is that it seeks to do an end-run around the illusion in order to remove it, so that the individual can apprehend the facts without the obscuring effects of the illusion. Indirect communication, then, can serve business well when either of two conditions prevail:

1. The audience requires, not more information, but an alternative understanding of the information it already has.
2. The audience has an emotional resistance to a message that keeps it from acting in optimal ways.

While an indirect strategy does not give anyone a communication panacea for all business circumstances and contexts, it does provide business people with a potent tool when they find themselves, let's say, in a room that suddenly goes dark.

Anyone for dunking?

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10 TARA GREY COSTE & CASSANDRA GREY COSTE

MARGINALIZED?! THE NEW CREATIVE IN THE NEW CORPORATE REALITY

The modern organization is faced with a harsh reality of global competition, unstable markets, and rapid innovation cycles. Long gone are the days when we could settle into a familiar routine and just do our jobs. In this climate, creativity and effectively functioning creatives are more necessary than ever before. However, innovative work and creative people have often been unappreciated and dismissed. Thankfully, there has been increasing attention paid to organizational creativity in this century, to the point where many, if not most, organizations list it as a key goal (Mumford, Scott, Gaddis, & Strange, 2002).

This is good, as being competitive in today's market necessitates serious attention paid to the corporate value of creativity. Unfortunately, coupled with this understanding is an increasing pressure by financial analysts to achieve various performance measures, quite a problem in an organization that wishes to enhance creativity. Organizations will simply not be able to continue to produce creatively under conditions of stress and extreme productivity pressure. Under these conditions, organizations and their employees seek stability, to reduce uncertainty when managerial focus is firmly placed on reducing errors and minimizing waste. As Boehlke (2008) argues, "you may use pressure as a management technique, believing that it will spur people on to great leaps of insight," but "when creativity is under the gun, it usually ends up getting killed" (p. 80).

Luckily, in a time when metrics are king, people are resisting sole reliance on such measures. As Mainemelis and Ronson (2006) attest, "there is something more fundamental in human nature than the image of the 'sober,' rational agent" (p. 124). And there is a growing understanding of the complexity of innovative activity, a greater reliance on teamwork, and an increase in team sizes (Jones, 2009). Furthermore, the fundamental make-up and facilitation of these growing teams requires recognition that managing the diverse and unknown effectively can be a source of competitive advantage (Basset-Jones, 2005; McLeod, Lobel, & Cox, 1996).

That said, diversity can also lead to misunderstanding and conflict, leaving organizations in a tough situation. As Basset-Jones (2005) states, if companies "embrace diversity, they risk workplace conflict, and if they avoid diversity, they risk loss of competitiveness" (p. 169). Thus, we must learn to walk this careful balance and so move on to further discussion of the diverse element and the dynamics of the creative.

For creatives to effectively contribute to organizations that are more rigidly bound than they are, they must be able to think multi-culturally. They must both stay true to their view of the world that encourages them to be different while simultaneously understanding and acclimating to organizational culture. This attention to multiple cultures can, in fact, be quite beneficial to the organization. When people have multiple cultural lenses, they are more likely than monoculturals to develop new ideas and unconventional solutions

leading to less conformity and groupthink (Fitzsimmons, Miska, & Stahl, 2011). Key to the effectiveness of this approach is an environment in which there is an atmosphere of trust and respect so that people may invoke different perspectives to use creative problem solving for joint gains (Fitzsimmons, Miska, & Stahl, 2011).

Fortunately, if a certain level of trust can be achieved, great gains in corporate innovation can be achieved. Long discussed in the creativity literature is the fact that novel ideas result from combining thought categories both within and across domains. As Yang and Konrad (2011) state, "access to new sources of information, knowledge, and perspectives enhances the potential for organizational innovation by increasing the number of thought categories and mental images available for modification and recombination" (p. 1064). Furthermore, research supports the notion that organizations with a greater store of various knowledge bases are better innovators and can develop and adopt new processes into daily operations (Yang & Konrad, 2011).

The flip side of idea generation in the creative process is, of course, the acceptability factor. An idea must be both new and useful to be creative. Thus, in the exchange of varying perspectives on an idea there must be authentic evaluation of and elaboration on the original thought. To fully take advantage of what history has to offer and mobilize creatives to bring their unique perspectives to a corporate world, a recognition of the similarities of all oppressed movements is needed. A key component of this is that the creative must use what he or she has to advantage. Marginalized peoples cannot simply rewrite the system, but understanding the system can be of vital help. According to Sandoval's (2000) theory of oppressed groups:

> All social orders hierarchically organized into relations of domination and subordination create particular subject positions within which the subordinated can legitimately function. These subject positions, once self-consciously recognized by their inhabitants, can become transfigured into effective sites of resistance to an oppressive ordering of power relations. (p. 54)

Creatives need not try to overtake the non-creatives in the corporate setting, but rather position their talents to take hold and permeate the consciousness of the organization (Sandoval, 2000).

To do this, creative and creative teams must claim an emancipation of sorts. "Emancipation is triggered by the assertion of equality in the face of institutionalized patterns of inequality, it works through a process of articulating dissensus, and it creates a redistribution of what is considered to be sensible" (Huault, Perret, & Spicer, 2014, p. 22). Emancipation, more traditionally the battle cry of the revolutionary, is not a dynamic we usually associate with corporate life. However, recent literature in management theory speaks to themes such as self-discovery, freedom, rebellion, and eliminating unnecessarily alienating forms of work organization (Huault, Perret, & Spicer, 2014). As Huault, Perret, and Spicer (2014) argue, emancipation is the process through which one becomes free of cultural conditions that place restrictions upon your ability to articulate your ideas. If creatives are to be more effective for the organizations they work for, they must be emancipated from the cultural barriers placed in their paths.

Other pieces speaking to the value of individual difference and the struggle faced by marginalized people may shed further light on this struggle. Susan Cain's (2013) explora-

tion of the place of the introvert in today's extrovert ideal mindset brings forth a good example of harnessing agency in marginalized groups. Cain's book, *Quiet*, explores not solely the oppression of introverts in today's public and private spheres, but delves into the strengths of introverts in contemporary systems. Cain highlights the connection between "socially poised introverts" and creative people (p.74). Thus, we return again to the notion that the creative may never want to fully assimilate to the dominant culture of the corporation, as evidence points to that only stymieing the creative process. Moreover, corporations need not thrust creativity upon all members of an organization. It is the healthy mix of difference that breeds innovation (Cain, 2013).

And this is key—difference, risk, and discomfort-- all these things come along with creativity. Blazing a trail for that which is different will involve taking some risks and the very real possibility of failure. Although research affirms that people, and organizations, in general tend to avoid risk and uncertain outcomes (Shalleya & Gilson, 2004), creatives must carve out a space that allows them to take risks, to fail, to learn from those failures and continue stretching the envelope. Thus, sounding the rebel yell of emancipation is not enough; a sense of play must also come into being. Mainemelis and Ronson (2006) argue that since the start of the Industrial Revolution traditional administrators have emphasized rationality and consistency, but studies of exceptional professional creatives find that the creative maintain their playful attitude toward their work for the span of their careers.

Clearly organizations should recognize that a diverse mix of employees can be beneficial. In fact, a number of organizations that have made a strong commitment to diversity have begun to make the connection between business goals and diversity (Shapiro, 2000). The creativity literature has long argued that interaction with a diversity of people is essential to creative productivity. Often labeled the "value in diversity" hypothesis, it is argued that group diversity should lead to a diversity of ideas from various knowledge, skills, and perspectives and, thus, lead to better creative problem solving (Shalleya & Gilson, 2004). However, increasing numbers of historically marginalized people does not necessarily give them voice (Yang & Konrad, 2011).

Recent literature has started linking failures in diverse employee involvement to the failure of organizations to ascertain what will motivate diverse employees to become involved (Shapiro, 2000). To truly succeed, organizations must blend solid employee involvement practices with solid diversity management practices so that the different information, knowledge, and values of historically marginalized people can be injected into higher-level organizational decision making (Yang & Konrad, 2011). Organizations must allow the spaces and learning experiences that enhance self-actualization and creativity, must encourage deep understanding of a new concept, must facilitate opportunities to develop multiple and flexible perspectives (Burleson, 2005).

Thus, the decision of many corporations to include creativity or innovation as part of their mission is a complex undertaking that can often be more for show than an indicator of true intent. To institutionalize creativity is different than embracing the intuitively creative. We venture to say that institutionalizing creativity is too broad and does not allow each member of an organization to focus on his or her strengths. Ahmed (2012), looking at the status of diversity in institutions, asserts that "when things become institutional, they recede. To institutionalize x is for x to become routine or ordinary such that x becomes part of the background for those who are part of an institution" (p. 21). While diverse thinkers in an organization should undoubtedly be present, the desire to make difference unnoticeable is harmful to individuals' unique identities and histories.

Strategies to combat this concern need not look further than the tactics one uses to make something institutionalized in the first place. As soon as something becomes a given, it must be brought back to the forefront of consciousness and critiqued yet again. Ahmed (2012) argues that getting diversity into an organizational consciousness involves knowing that "when your task is to get out information that is less valued by an organization, the techniques for moving information around become even more important" (p. 30). One that is marginalized or those working on behalf of the marginalized must constantly be working to bring the value of that diversity to the forefront of the minds of the organization.

Obviously, conditions don't change overnight. Organizations have been slow to learn how to manage diversity in a positive manner (Shapiro, 2000). Yet there has been progress in our learning on that front. Research indicates that leadership clearly articulating the reasons why diversity will help achieve organizational goals helps employees overcome biases (Yang & Konrad, 2011). As leaders induce diversity, they should also simultaneously implement tools to help reduce stress and conflict such as focusing on larger goals (Mumford, Scott, Gaddis, & Strange, 2002). Furthermore, they should implement strategies to foster trust and inclusiveness, so that they may capitalize on diversity to achieve an innovation advantage (Basset-Jones, 2005). Finally, Boehlke (2008) suggests the following:

1. Pace productivity: recognize performance motivators and stressors
2. Capitalize on failure: foster a more trusting learning environment
3. Manage connections: leverage connections as well as relationships
4. Pay the price: acknowledge the risks and rewards of being different (p.78)

And the leader must juggle both that which makes the traditional work well and that which makes the non-traditional work well.

Clearly, a leader of the diverse must possess a special expertise to enact that which is different and rewarding. He or she should utilize a number of tactics that will address the concerns of creative people working in an organizational environment that may not be the best fit for them (Mumford, Scott, Gaddis, & Strange, 2002). Findings from performance evaluation research indicate that leaders should give specific support for creative role expectations and develop an environment where employees expect to receive developmental feedback. For this to be effective, leaders must emphasize information sharing and constructive feedback; what seems most important is how the feedback is given (Shalleya & Gilson, 2004). This is clearly supported by the creativity literature which includes the place in which the creative process is occurring as a critical element of success.

Which leads us back to the organization in crisis, the organization in this scary modern reality that makes many administrators want to tighten the reins so that they may control what they can—this will not work. Gaining competitive advantage means focusing on employee contributions given through consent and commitment rather than blind compliance. As Boehlke (2008) eloquently states:

> We cannot accelerate innovation by increasing the demand for flawless execution or striving to eliminate uncertainty. Without honest and open inquiry into this domain of action, [power mongering] behavior, which drives harder and harder for more and more, easily remains unchecked. Pacing productivity requires con-

> versation about the dynamics of the generative process of humans at work. We are *not* machines. (p. 82)

Leaders must steer away from "command and control" and toward a stance of facilitating, of encouraging, of empowering their employees with a focus on individual needs and aspirations (Shapiro, 2000).

Boehlke (2008) argues that "leadership at the intersection of power and passion requires establishing trust in domains we are unaccustomed and often inexperienced in addressing" (p. 86). Helping employees strive toward self-actualization, to become everything they are capable of being, requires emphasizing creativity, play, flexibility, well-being, and adequate challenge (Burleson, 2005). And it requires that the creatives themselves learn to place their voices firmly in the organizational context without losing that which makes them the powerful growth element that they are.

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11 MICHAEL BROWN & CHRIS WILSON

CREATIVE DYNAMICS: ARTISTIC PRODUCTION AS A MODEL OF CREATIVE INTERACTION

"O! For a muse of fire, that would ascend the brightest heaven of invention."
– William Shakespeare, *Henry V: Act 1, Prologue*

ABSTRACT Defining creativity in musical terms and the extent to which theories of creativity may reflect and inform creative practice within a UK university arts-based college is at the heart of this chapter. Creative thinking in music, particularly with reference to commercial application is where the investigation begins; models of collaborative interaction, which is a fundamental preoccupation for undergraduate popular music students, are reviewed and evaluated highlighting the boundaries within which composers are required to work to attain commercial authenticity. Beyond this, the development of an applicable creativity toolkit is discussed which has the potential to challenge aesthetic sensibilities allowing students to transcend the boundaries of the familiar and explore domains less familiar. The chapter concludes by validating the benefits of collaborative creative activities particularly with reference to multi-modal interaction and the role of technology.

Keywords: Creativity, Collaboration, Music, Higher Education

Forward

Much research into creativity is focussed upon the understanding of paradigm changing innovations, upon ideas and actions that propel a given *field* forward into new areas. Whereas this is significant and has the potential to offer insights into the very nature of the creative act as an individual level phenomenon, there is much to be learned from creative activity, particularly collaborative, that takes place within well established structures where development and refinement of form itself is normalised behaviour, and can equally yield insights into what can be very challenging areas of invention. The consideration of Art and Music as a collective creative process is what this chapter is fundamentally concerned, in which individual creativity is certainly not excluded but is considered a part of, as McIntyre (2001) expresses it, *"a more Copernican model in which the person is part of a system of mutual influences and information"*. The Arts may be considered a unique form of creative expression since they fundamentally depend upon innate talent, learned skills and a specific sense of the aesthetic within the *field* of expression, as Zaidel (2013, pp. 133 - 148) indicates: *"…it (artistic creativity) comes on top of mentally stored knowledge in the brain. Indeed, the backdrop for creative innovation is the societal culture of the creating individual. Creativity also implies cognitive flexibility and rich associations among units stored knowledge."*

College of Rock

This chapter is drawn out of educational practice within a UK undergraduate programme in popular music; a significant part of the curriculum is focused upon the composition and performance of music with much of the initial activity inevitably centred upon the commercial facing production of music; the students are naturally motivated and easily engaged, given their background, in the performance and composition of popular song, but they are also encouraged to explore more esoteric forms, no less commercial in many ways, but invariably less familiar to them in which exploration of a variety of creative devices are presented that potentially allow them to transcend their normal experiences. Conditions for musical creativity are discussed with a view to offering insights into prevalent compositional processes within the creative sectors of the music industry. Collaborative work is very much at the centre of the educational experience in programmes such as this. In many ways musicians are natural collaborators fulfilling their defined roles well, particularly in performance, drawing creatively from commercial role models outlined below. As a part of their compositional studies the students upon this programme of study are also introduced to ideas drawn out of a number of key texts on creativity such as by Wallas (1926), Koestler (1964), Guilford (1967), Baron (1969) and Sternberg (1999), to raise awareness of profitable creative conditions and to encourage the application of an array of tools and methods. The discussion will begin with a review of collaborative creation within the commercial music industry to draw out some of the inner, perhaps transferable, mechanisms of the creative interactions that may be applied in the educational environment. This area has been chosen for study because it exemplifies very clearly the notion that creativity prospers well within constraints. Imposed limitations, self or cultural, in the creative act are considered by many to be important characteristics as psychologist *Rollo May* observed: "*Creativity itself requires limits, for the creative act arises out of the struggle of human beings and against that which limits them.*" (May, 1975). Music itself has inherent limitations determined by culture, history, performance and instrumental capabilities; also expectations of style govern acceptable aesthetics. In many ways the composition of music may be considered as the novel selection from sets of related attributes or elements,

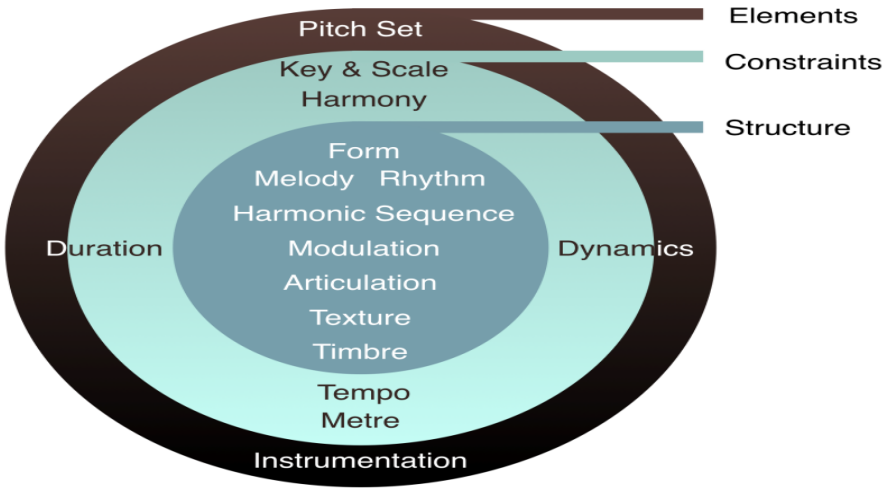

Figure 1: The Elements of Music

but this offers very little insight into the stylistic context within which choices are made, the elemental interdependency and the sociological conditions within which performance expression, gesture, articulation and interpretation are influential factors determining success. Musician *Frank Zappa* expressed a very pragmatic understanding of music composition: *"Composition is a process of organisation, very much like architecture. As long as you can conceptualise what that organisational process is, you can be a 'composer'—in any medium you want."* (Zappa, 1997, pp. 195-197).

Two Heads are Better than One

The traditional, and perhaps romanticised, view of the isolated and often troubled artist seeking divine inspiration expressed through an individual voice, does not take into account, the social and interactive role of the communities within which the artist operates.

"Some heades haue taken two headis better then one: But ten heads without wit, I wene as good none." (Heywood, 1546)

An old English proverb still in common usage, but expressed in the modern vernacular, extols the virtues of solving problems with a like-minded other, but warns of increasing the ranks with unqualified members. There is of course precedence enough to justify the supposition that for some, creative partnerships are not only beneficial but a necessary condition without which, the solution or creative product would not be found or would not be deemed as effective. Shared leadership on some level is not a new concept; although seemingly counterintuitive, there are successful models in business (Kocolowski, 2010), education (Morrison, 2013), the arts (Hoyle, 2014) and music (Mauskapf, 2011) administration where the lead decisions are shared seemingly beneficially between individuals or a community of people; but to what extent can a creative product be a shared artefact and what are the ingredients of successful creative collaborations?

What's in it for Me?

Whereas it is not uncommon for individual songwriters to cite the creation of a song more or less fully realised, a song has a number of distinct features that can in principle be conceived independently. This presents a number of opportunities for collaborative creativity.

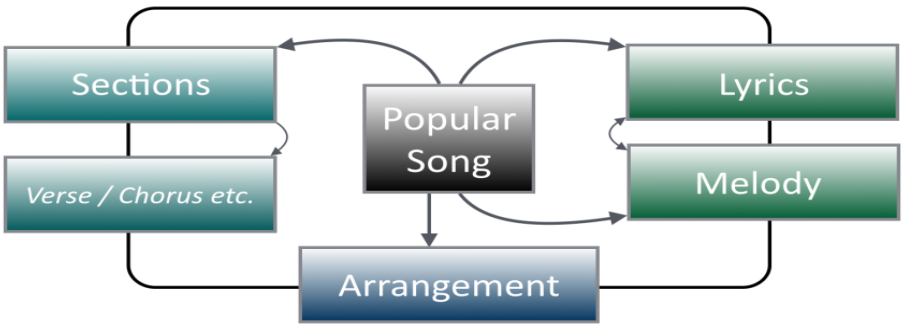

Figure 2: The Components of Popular Song

The world of music, particularly theatrical and popular, offers us a number of high-profile examples of successful, in terms of productivity and commerciality, creative partnerships.

In a recent study by Pettijohn and Ahmed (2010) it was determined that collaborative partnerships were responsible for as many number one hit songs as individual composers in the examined time period of 1955-2010. There are a number of models of creative interaction that typify modern popular song writing collaborations, eloquently expressed by Bennett (2012), and here adapted to exemplify the main aspects of the relationships.

1. *Division of Labour*—the creative roles are here clearly defined such as composer or lyricist; the creative input could be achieved with minimal interaction by those involved and could begin from either starting point.
2. *Free for All*—this model accommodates a more fluid interaction, between potentially a number of involved collaborators, where the roles are not as tightly defined. This may involve extensive use of technology including online storage space but could just as easily be very low tech involving direct instrumental dialogue between two partners.
3. *Improvisation*—the song material is developed out of band rehearsal sessions within which performance roles are generally defined; the ideas may begin a with a seed or 'riff' introduced by one member or may evolve out of a collective improvisatory exploration.
4. *Producer*—the producer is a more experienced composer that has the capability of taking possibly more rudimentary ideas from a less experienced performer/composer and steering the creative product. This could involve developing or complementing idiosyncratic performance characteristics of the less experienced partner.
5. *Experimentation*—The creation of a song may be born out of the exploration of musical features, this could be the result of collaborative interplay with another, an excursion into another musical or extra-musical domain, or collaboration with a computer program.

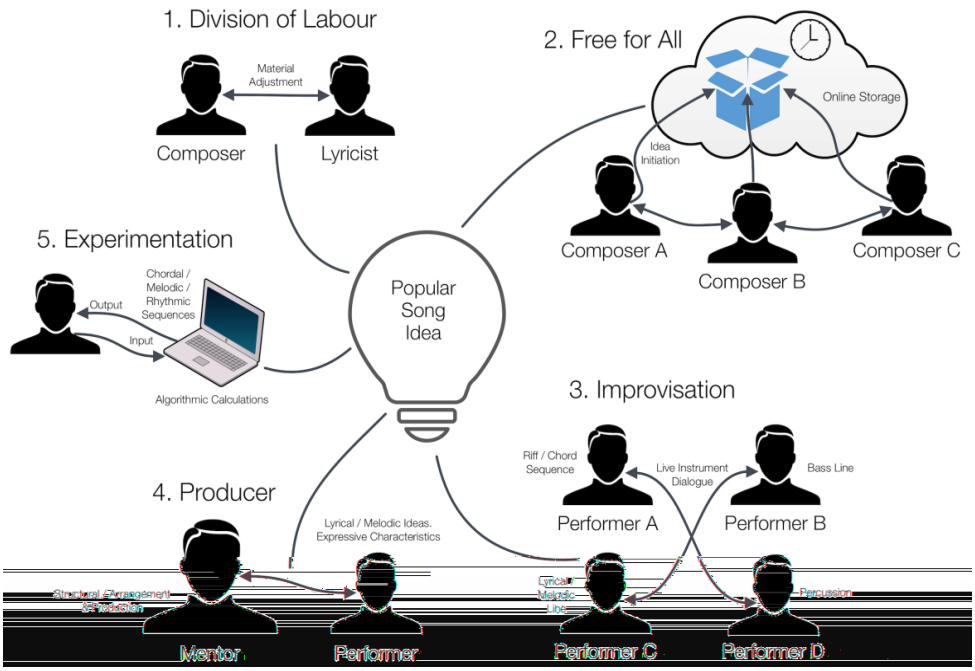

Figure 3: The Collaborative Models

In each case usually there is invariably a starting point or incept, which could be as simple as a song title, initiated by one of the collaborators: *"…the incept may be any sort of thing: the first sentence of a story or the last, a simple plot situation, a character, theme, scene, figure of speech, or tone or style…"* Beardsley (1976, pp. 305-301).

Trouble at the Mill

The UK music industry is estimated to be worth £3.8 billion annually to the British economy. With so much at stake it is understandable that the creative process might be formalised to some extent. There have been in the past a number of notable examples of a factory -line approach to creativity encouraging competitive interaction. According to Bennett (2012) the UK popular single market is currently dominated by music crafted by collaborative teams most commonly co-written. The archetypal model for the *manufacture* of popular song was implemented in *Tin Pan Alley* in the early 20th century, where New York City music publishers and songwriters would conglomerate which gave rise to some very successful, many collaborative, songwriters (Reich, 1994). There followed are other notable centres of industrial song writing in a similar vein such as *The Brill Building* (1940-60) and in major recording studio centres around the world, as the technology evolved, such as *Denmark Street* (Daley, 2004). *Carol King* succinctly expressed the experience of composing in *The Brill Building: "Every day we squeezed into our respective cubby holes with just enough room for a piano, a bench, and maybe a chair for the lyricist if you were lucky."* (Frith, 1978). These were not what might be regarded as *ideal* working conditions but the competition resulted in some of the most successful working relationships in the history of popular music. The more recent development and proliferation of online communication is presenting new models of remote creative conferencing. It is estimated (Salem, 2014) that by 2015 the world's mobile workforce will be in the region of 1.3 billion with the potential to raise industry productivity through *cloud* based sharing technologies, maximising waking hours across multiple timezones for collaborators to progress the project continually; the convenience of passing materials negates the issues of location and offers a convenience of interaction and new model for the recording industry.

The Formula

The constraints within the commercial world of popular song are so tightly defined that the challenges to find novelty whilst embracing a sufficient level of familiarity are often extreme, but to what extent are constraints in such creative process actually stimulating and ultimately beneficial? Igor Stravinsky was very clear on the matter: *"The more constraints one imposes, the more one frees one's self of the chains that shackle the spirit…"* (Stravinsky, 1942). The characteristics of a song bind the creator to a number of fairly rigid parameters that define for example: structure, length, tempo, metre, melodic range, acceptable harmony and lyrical content (Bennett, 2012). When these are framed within the stylistic constraints of particular musical genres, the creative expectations are more clearly understood, if we accept the definition of genre as *"a set of musical events (real or possible) whose course is governed by a definite set of socially accepted rules."* (Fabbri, 1982).

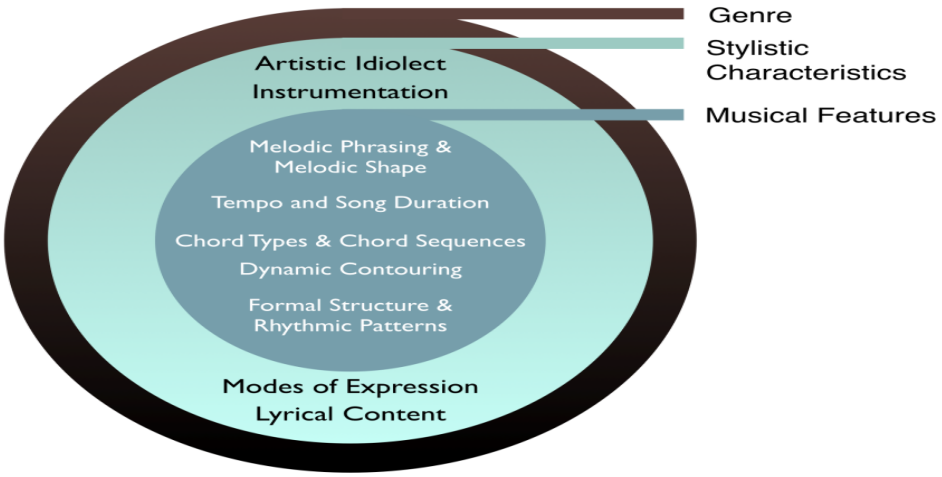

Figure 5: Musical Genre

Musical styles evolve over time reflecting cultural conditions as can be seen from a recent study of lyrical content (Lamm, 2014), but most operate within the constraints of predefined styles with acceptable localised outcomes. The constants are such that to a significant degree the success of a song can be calculated. *Music Xray*, which defines itself as a digital A&R system, is able to extract musical features such as: melody, chord progression and rhythm, from submitted songs and report on five common characteristics (composition, production, arrangement, performance and hit potential) that it can compare with a database of previous hit records. The company claims that the software is able to determine if a submitted song is likely to become a hit record with up to 80% accuracy (Gladwell, 2006). Identifying the potential for success was certainly one of the roles of the A&R division but another was the seeking out of new talent and innovation in which the company would invest; the market has evolved to such an extent that a record company may not invest until a level of success is first established independently (Lindvall, 2011).

Opposites Attract

What characteristics govern the successful creative alliance? Successful creative partners have a balance of commonality that sustains the motivations and differences, in terms of experience or skill-sets, that keeps the relationship productive. There is often continual tension and the potential that the differences may evolve and ultimately steer each member in completely different directions creatively.

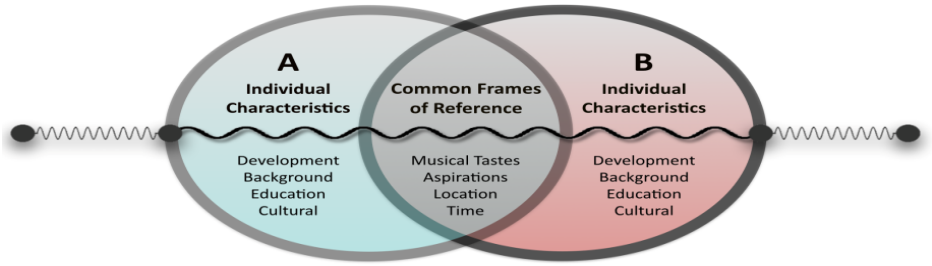

Figure 6: Collaborative Tensions

Mike Stoller expressed this well: "*We started fighting the moment we met,……We fought about words, we fought about music. We fought about everything.*" (Fricke, 2011). The individual differences that may be social, instrumental or educational are what give insight into the success of the collaboration but for sustenance, must incur some mutual favourable outcome however that is measured. *John Lennon* in an interview with *Playboy* magazine said of *Paul McCartney*: "*He provided a lightness, and optimism, while I would always go for the sadness, the discords, the bluesy notes….*" (Sheff, 1980). One of the reasons why *Tin Pan Alley* was so successful was perhaps because it offered opportunities to embrace cultural diversity; over twelve million immigrants arrived in the United States through the *Ellis Island* portal alone between 1892 to 1954 (Turner, 2013). As Laermans (2013) expresses it: *"Collective labour cannot take off without a collection of diverse competencies, ideas, interests and attitudes that must be presupposed as being collective."* In recent years sampling technology has offered a new model of remote collaboration by allowing the direct reuse of older musical recordings. There are also many computer programs that present themselves effectively as algorithmic digital partners in musical creation offering musical novelty through *calculation.* There are benefits of nurturing idiosyncratic differences within collaborative partnerships and in being receptive to surrounding influences, as the playwright Tony Kushner (1997, pp. 145 - 149) expresses it: "*The fiction that artistic labour happens in isolation, and that artistic accomplishment is exclusively the provenance of individual talents, is politically charged, and, in my case at least, repudiated by the facts.*"

The *Gravity* of the Situation

An area of commercial compositional experience that is invariably appreciated by students upon an undergraduate programme in popular music, is that of film music or more generally music for moving image, of which there are a growing number of successful of composer role models sourced from the area of popular music (Tiedemann, 2014) and movie soundtracks that draw very heavily upon popular music itself to serve narrative and expressive designs.

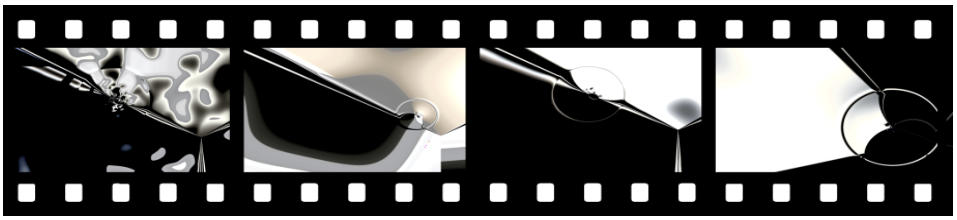

Figure 7: prism—Abstract Frames

There is a technical commonality between film and music producers in the form of production software; the technology allows a fluid interaction between time-based media; for musicians this often means surrendering control of the one characteristic that one would expect they would like to retain control of, that of *time,* since the timing of musical/sonic events must often be surrendered to the narrative structure which can be surprisingly liberating and encourages the development of an aesthetic sense not hindered by familiarity of known musical systems.

This observation prompted the development, by the current authors, of prISM to explore this phenomenon by encouraging more direct interaction between art forms and evolve a creativity toolkit principally for musicians. Artists generally develop creative toolkits to produce specific outcomes which consist of techniques and skills to *kick-start* the creative process; as part of the prISM research we have attempted to systematise the common musical procedures and integrate collaborative mechanisms to support the early phases, and progress iteratively, creative musical thought.

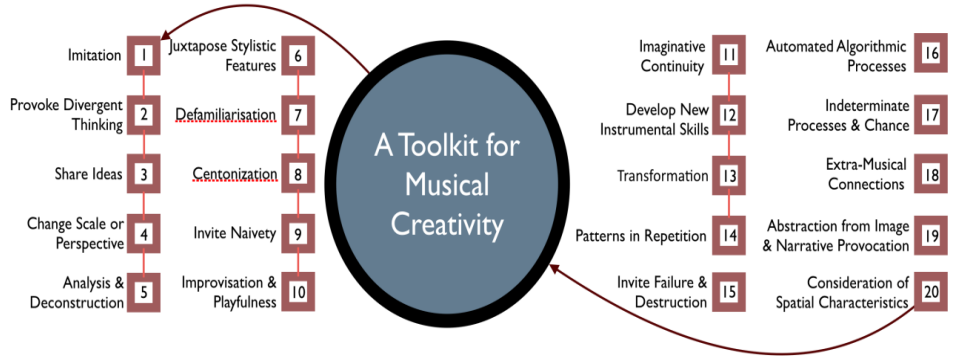

Figure 8. The Creative Toolkit

This study has offered some insight into ways in which a commercial facing educational system might prepare students creatively for the professional environment. It also opens up for consideration the notion of creativity within a very tightly bounded creative system and how creative individuals might profit from collaborative interaction. If all we do is express the *spirit of our times* then how does the product evolve given the rigid constraints limiting and potentially exhausting the resources for novelty? Artists are fundamentally *of* their time, and the they usually do not create in isolation; they are often influenced by history and their peers and generally do not *innovate* within their *field* of creativity continually since it is not always in their best interests; if they were to do so their work may not be recognised as having *style or* a consistent expressive voice. Innovations do of course occur and the shifts are often triggered by artists making diverse connections drawing very often upon cross-modal influences but sometimes our most revered artistic expressions are to be found at the *epoch* of the prevalent style. The final word here is left to Tony Kushner (1999)| *"Marx was right: the smallest divisible human unit is two people, not one; one is a fiction. From nets of souls societies, the social world, human life springs. And also plays."*

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12 JULIO C. PENAGOS-CORZO

CREATIVITY AS AN ATTITUDE: AN APPROACH TO THE ORIGINS OF CREATIVITY

Introduction

There is relative consensus on grouping into blocks the various theoretical and methodological approaches, which apparently share certain criteria, to the study of creativity. Such classification is helpful in that it allows us to contextualize these approaches. The specialized literature considers the work of Rhodes (1961) as the starting point for this classification. It includes: a) person-centered approaches or those who see creativity as a personality trait, b) approaches focused on the process or that place it as or within a group of cognitive processes, c) product-centered approaches and d) approaches that focus on the environment. On the other hand, the study of creativity could also be classified as different levels of interacting forces from a macro level to a micro level. In this sense, Hennessey and Amabile (2010) suggest seven levels, from global to individual: Systems approach, Culture / Society, Groups, Individual /Personality, Affect /Cognition / Training and Neurological.

Each approach or group of approaches provides the means for understanding creativity. However, this object of study seems elusive and probably different to each of them. Is it the same to assume creativity is a cognitive phenomenon than a personality trait? If its definition is socially determined does it make sense to seek physiological correlates? Or, conversely, does it make sense to define it in terms of social judgment when there is evidence of psychophysiological correlates? The point is not to answer these questions. It is evident that there is no consensus about what is called creativity. There is fertile ground for approaches that can establish what creativity is or what is it that determines it. One of these approaches could be to consider it an attitude.

There are people with greater creative attitude and people with lesser creative attitude. It is important to separate this approach from those who see creativity as a personality trait. When creativity is approached as a personality trait, what is commonly done is to describe certain personality variables having any correlation with creativity. What is proposed here is that creativity, as an individual act, has the characteristics of an attitude. It is this attitude which may allow generating processes and products that can be labeled as creative or that can be creative for a particular person. While there is a notorious debate on the role social environment plays on creativity, a role that cannot be ignored, what we are talking about here is that there is something which may be called individual creativity where the social dimension of creativity is approached from the point of view of subjectivity, assuming that the subject is mediated by, and in turn, mediates the social environment.

Creativity is usually defined on the basis of two characteristics: originality and relevance (usefulness). It could also be operationally defined through various psychometric tests, i.e.

through the Torrance Test of Creative Thinking (TTCT). In so doing, some of its features such as originality, fluency, flexibility or production would also be defined at the same time (Torrance, 2008). These qualities are observed and inferred through the product generated in the psychometric test. The same is true of divergent thinking: It is "seen" in the test or in the behavior that is performed. But, what is it that triggers originality or the generation of creative products? A disposition, an inclination, a favorable tendency to rate stimuli in an open, permissive and inclusive manner. In other words, a creative attitude.

Overview of a creative attitude

There are different approaches to the study of attitudes. For example, it has been suggested that there are three different components or types of response in an attitude: cognitive, affective and behavioral (Breckler, 1984). The first one refers to the beliefs and thoughts about the object. The second one denotes the feelings of rejection, attraction, liking, etc., to the object. The third refers to the behavior toward an object. This approach is known as the Tripartite Model. Furthermore, and in contrast to this model, the Theory of Reasoned Action states that attitudes have only one component and this component is evaluative. Under this approach, attitudes are determined by the characteristics that seem important according to the observers (Worchel, Cooper, Goethals & Olson, 2002). However, it can be said that attitudes reflect both positive and negative evaluations toward an object (Fabrigar, MacDonald & Wegener, 2005) and behaviors derived from such assessments (Myers, 2005; Summers, 1978). Therefore, an attitude can be seen as "a lasting tendency or acquired predisposition to evaluate a person, event or situation in a certain way and act accordingly" (Vander Zanden, 1990, p 19). This tendency or predisposition may be conceived as an intermediate variable between a stimulus (object of the attitude) and the response or outward manifestation (Morales, 2006) and includes beliefs and feelings about this object (Summers, 1978).

As can be seen, these approaches lay special emphasis on the evaluation towards the object. This raises two conceptual problems: the term "evaluation" and the word "towards". The latter entails a conceptual problem by talking about creativity as an attitude, since we are not talking about an attitude towards creativity, but about creative attitude. Creativity is not the object of the action, but it is an adjective or a noun (creative attitude). Can the object of the attitude be part of the attitude? When speaking of favorable or unfavorable attitudes toward something it can also be said that someone simply has a friendly or hostile attitude. That is, the attitude incorporates, in this case, the type of behavior, cognition or emotion. Such is the case of what in this paper is called creative attitude. The attitude incorporates the emotional, behavioral and cognitive disposition called creativity, and that creative attitude can manifest itself towards or in mathematics, cooking, interpersonal relationships, etc. Now, when someone says they have a hostile or friendly attitude, it cannot be denied that hostility or kindness has an object, nor can it be denied that there is a group of behaviors can be called hostile or friendly. When a creative attitude is present, there is a tendency to think and act with a certain degree of flexibility. This is true for various fields of knowledge: artistic, scientific and cultural, and also for everyday life. That is, when people evaluate a situation and have favorable tendencies to associate it in unconventional ways, they have a creative attitude toward the situation. When people face an event and do so with openness to the experience, they have a creative

attitude. When modifying strategies and lines of action to recognize or solve a problem, they also have a creative attitude.

According to Katz (2008), one of the purposes of attitudes is to serve as an instrumental and adjustment means to help organize and interpret new information. If it were necessary to establish the role of creativity in addition to its clearly adaptive function, it would undoubtedly be the same function that Katz establishes for attitudes. According to this approach, the role of organizing and interpreting information, called knowledge function aims at achieving an organized and stable world. Attitudes will try to arrange things so that this goal is achieved. It may seem contradictory. Apparently, creativity breaks structures, and the ability to deal with uncertainty has been identified as a feature of a creative personality. However, in the act of creating, a major effort will be devoted to organizing or reorganizing and stabilizing the world in its new form.

The affective creating impulse

Due to the fact that creativity is associated with the quality of being a genius and with the extraordinary, it is common for the neophyte to think there are people who are creative and others who are not. The "genius" appears as a kind of person with a special gift for whom inspiration comes suddenly. Perhaps nothing is further from the truth. The "genius" required a high dose of experience and a considerable investment of working hours in order to have sufficient expertise that allowed him a great creative productivity. It has been reported that 10 years of sustained work or 20,000 hours are needed for geniuses to produce their masterpieces (Romo, 1997). This tenacity is a relevant variable associated to the creative process (Csikszentmihalyi, 1997). Tenacity by itself does not produce creativity, that much is clear. However, creativity by chance and without effort is not possible either. It is the effort and the form it takes what encourages creativity. Although there are countless cases of apparent randomness in scientific discovery, the truth is that such fortuitous events occurred under the watchful eye of the scientist. As Pasteur said: "Chance favors the prepared mind". Minds that spent much time working in one direction and that were flexible enough to change the trajectory when the unexpected came.

Maintaining a certain direction for a long period of time when the target is not always visible or contains many uncertainties, requires an extraordinary adaptive ability and a particular coping strategy. Being tenacious requires company and that company is called motivation; if this motivation is intrinsic, then the better. Intrinsic motivation has been identified as an important attribute in the creative process. Apparently, the creative problem solving occurs more frequently in the presence of intrinsic rewards rather than with extrinsic rewards (Amabile, 1986, 1996). Such motivation is not the cause of the creative process, while it is a condition that contributes to it, it does not control it (Runco & Chand, 1995) given that motivation depends on cognition. Being motivated for something requires different ways of interpreting and seeing the world. It depends on having goals to achieve and that these objectives have significant value. The target or the beneficiaries of the creative acts can be either the same person or the outside world (Forgeard & Mecklenburg, 2013).

The emotion that encourages the achievement of objectives includes a way to sense that there is some kind of direction. It is an emotion that functions both as an effect and as an additional impulse. That kind of projected target, of intuition of the right path, may be

what some call Analytical Wondering (Aldous, 2007). This process has been identified as part of the creative process. It can occur when an experience comes into conflict with well-established concepts and there is also a sense of walking in the right direction (Aldous, 2007). The crucial part of this wondering is the feeling that there is something fundamental in relation to the problem. Perhaps this is the somatic marker proposed by Damasio (1994). When someone makes a decision, the emotions are involved by way of necessity and probably guide this decision (Markic, 2009). These observations support the model proposed here (see Fig. 1). The emotion or affection nurture each other and nourish cognition forming an amalgam that is difficult to separate. In turn, it mediates or drives the effect of cognition on behavior.

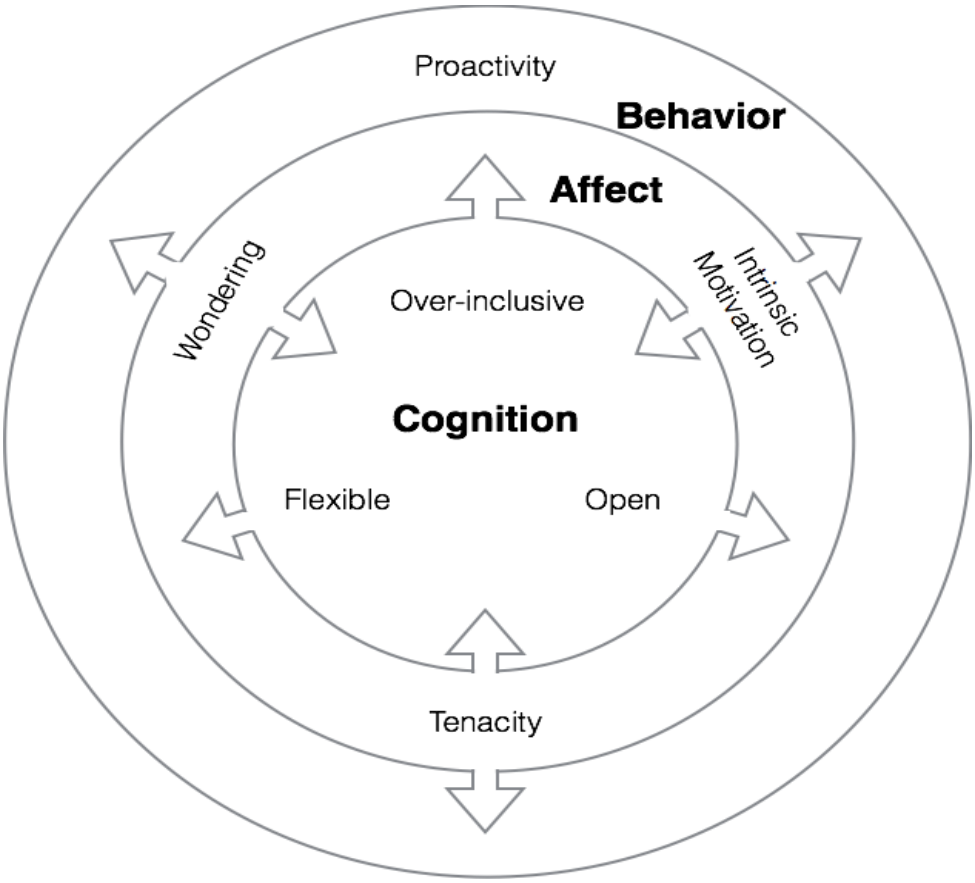

Figure 1: Components of creative attitude

Flexible, over-inclusive and open evaluative cognition

Cognitive processes associated with creativity have a solid base. Many authors have devoted their efforts to explaining how cognition intervenes in the act of creating. On this subject, the works of Wallas (1926), Guilford (1950) and more contemporary approaches proposed or reviewed by Fink, Ward and Smith (1996), Boden (2004) and Runco (2004, 2007) among other authors can be outlined. In general, all approaches underline flexibility as an important condition for creativity. Flexibility is defined as the tendency to generate a het-

erogeneous group of responses, or to use a variety of categories and themes when thoughts are produced (Runco, 1986). This ability plays a very important role in problem solving, helping human beings adapt to the demands of a changing world, and has a clear effect on creativity (Ionescu, 2012). Its central role in helping interpret the world in a different way and adapting to changes may contribute to a greater openness and a greater ability to make associations.

It was noted earlier in this paper that when people face an event and do so with openness to the experience they have a creative attitude. In this sense, there is abundant evidence linking openness to experience with creativity (Baer & Oldham, 2006; Connelly et al, 2014; Kaufman, 2013). Indeed, this variable contributes significantly to the explanation of the variance of scientific creativity (Grosul & Feist, 2013). One might ask whether the openness to the experience is a separate entity of creativity or if it is one of its components. The exploring mind and the inquiring intellect, factors identified as essential in the openness to the experience (Connelly, Ones & Chernyshenko, 2014) may also be descriptors of creativity.

When a situation is evaluated and there are favorable tendencies to make associations in unconventional ways, a creative attitude is present. Associating in unconventional ways is perceiving relationships where others do not. It is something that can be called over-inclusive thinking. Over-inclusive thinking is a feature identified in schizophrenia (Cutting, David & Murphy, 1987) and it occurs when a person places elements in the same category that are not part of it (Runco, 2007). This characteristic seems to be related to creativity. There is evidence of such a relationship both in people with psychiatric conditions (Payne & Van Allen, 1969) as well as in people without such conditions (Meyersburg, Carson, Mathis & McNally, 2014). In this sense, it has also been found that college students with high schizotypal personality are better insight problem solvers than students with low schizotypal personality (Karimi, Windmann, Güntürkün & Abraham, 2007).

From evaluation to behavior

The evaluations people, when they show a certain attitude, are the central part of the process –its core– but do not represent the entire process. For example, if someone has a negative attitude toward certain religious behaviors, it will also be evident that this negative evaluation was preceded by knowledge and experience and is also usually followed by behaviors that reinforce such assessments. The attitude is not always manifested in behavior, social influences change the degree to which the behavior is similar to the evaluative attitude. The same is true of creativity. Environments that are unfavorable to creative behaviors decrease the probability of occurrence of these behaviors, but the latent creativity in the assessment that people make will continue to exist.

Most of what is considered creative are actions or the result of actions. The score of a test of creativity is an action or a result of a series of actions. A painting is also a product and was, at a time, an action too. The resolution of a problem, whether day-to-day or highly sophisticated, has the above elements as well: being an action and the result of an action. However, when one has taken a creativity test, painted a picture or solved a problem, every act necessarily implied an evaluative process. One way of looking at something, "feeling" it and making a judgment. Thus, creative behavior is driven by affection and has an evaluative germination.

Although creative behaviors will be different for each discipline or field, when someone displays a creative behavior it will have something in common with every other creative behavior: it will be self-controlled and proactive. While self-control has a cognitive basis, it is also a set of attitudinal skills (Dacey & Lennon, 1998). Such skills are finally manifested in a certain behavior, given that abilities are observed in what one does. Self-control either allows or does not allow people do what they want to do, and it has been shown to have a correlation with creativity (Dacey & Lennon, 1998). Self-control hardly occurs without a dose of assertiveness and vice versa. There is evidence linking self-control with both assertiveness (Asokan & Muthumanickam, 2013) and with creativity (Garaigordobil, 1997).

A creative person not only seeks to solve a problem, but also strives for creativity (Sternberg & Lubart, 1995). Therefore, his behavior will be a generative behavior. The new, the original and the relevant is the product of affirmative conduct aimed at the generation of products, whether they be ideas, actions or things. They are fundamentally proactive, self-initiated and purposeful behaviors in a specific field of skills. It is on this basis that it is possible to suggest that the behavior of the creative attitude is manifested in productive or generative behavioral skills.

Conclusion

In this short paper an approach to raise the issue of creativity as an attitude was established. There is still a long way to go. This proposal is an outline, but its dissemination helps further debate about its validity. Empirical approaches are needed to validate its robustness and consistency. The idea presented here has been presented in other forums and has received positive feedback, but only data can confirm it. Only data may be able to indicate whether it is valid to assert that creativity, considered as an attitude, is a conglomerate of assessments, affects and behaviors that are primarily flexible, tenacious in the face of uncertainty and proactive, aimed at generating individual and socially relevant ideas or actions.

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Author's brief bio
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13 STEVE HALLIDAY

WHEN "AHEAD OF HIS TIME" MEANS "BEHIND THE EIGHT BALL"

ABSTRACT Creativity does its best work when it finds a home somewhere on a continuum between the old and the new, between tradition and originality. Even the best new ideas must find rich soil that allows them to grow in our current world. Consumers need some familiar reference point that enables them to understand and adopt new things, and any creative initiative that lacks such a stake in the ground will almost certainly fail. The rise and fall of the first e-book initiative, more than a dozen years ago, illustrates the importance of locating an innovation within some familiar context.

Introduction

When we call someone "ahead of his time," typically we mean it as a compliment. "One day," we say, "the world will recognize his genius." Often, however, it never does. How many of us remember Charles Babbage or Heron of Greece? The former's computer innovations and the latter's ideas about steam power could have revolutionized their respective eras, but didn't.

Contrary to what many individuals think, creativity is *not* all about dreaming up totally new things, because those new ideas must find rich soil that allows them to grow in our current world. Creativity and innovation do their best work when they find a home somewhere on a continuum between the old and the new, between tradition and originality. People must have some familiar reference point that enables them to understand and adopt the new thing—and any creative initiative that lacks such a stake in the ground will almost certainly fail.

Edison's Fiasco

The famed inventor Thomas Edison made this uncomfortable discovery the day he visited a bank to secure investment funds for his newest innovation, the phonograph. A peeved banker took one look at his invention and shouted, "Get that toy out of my office!" The angry man simply had no reference point to appreciate the potential of the machine.

Today, we may glance at our MP3 players and iPods and laugh at the shortsightedness of the banker, but in fact, Edison never did make his innovation into a financial success. While he tended to focus on the technical proficiency of his products, competitors such as The Victor Talking Machine Company provided consumers with familiar touchstones that attracted consumer interest. Edison saw no need to offer such recognizable features—after all, didn't his company build better machines?—and so rival units such as the famed Victrola quickly gained the bulk of the market. Edison eventually shut down his unprofitable phonograph business (DeGraaf, 1995).

Wanted: Both the New and the Old

Human beings throughout history have shown a persistent tendency to want both the new and the old, the fresh and the familiar, the expected and the surprising, tradition as well as innovation. It's not a question of "balance" or of choosing one or the other, but of a desire for both in various doses at various times, according to the existential need of the moment.

Why do we tend to gravitate to the familiar? We want something to depend on, something we have grown to love, something that has earned our trust. And we crave the new and the unanticipated because novelties allow us to do old things better or to explore attractive things outside of our normal realm of experience—and who doesn't like the excitement and even thrills that often result?

The challenge for innovators is to position their creations in the context of something culturally familiar. Success comes more often to those who learn to excel at making connections between their exciting new thing and some comforting old thing. Regardless of the brilliance of the innovation, if the new idea, product or message lacks at least some familiar attributes that immediately resonate with the target audience, the innovation probably will flounder. Edison is far from the only innovator who has failed to profit from an amazing creation!

While the bulk of this chapter looks at the role this principle played in the failure of the first eBook "revolution," it might help first to briefly see how it has influenced the adoption of three previous innovations in key moments of publishing history. These include the codex gradually supplanting the scroll as the "book" of popular choice; the persistence into modern times of a medieval typographic design; and the inability of the printing press to quickly displace handwritten manuscripts.

From Handwritten Scrolls to Gutenberg

Although the codex gradually replaced the scroll as "the book" of the ancient world, it took centuries to do so. This, despite the fact that most Roman and Greek scrolls were some thirty to thirty-five feet in length, and some scrolls reportedly extended to 120 yards. No wonder the Roman writer Callimachus complained in 260 B.C.E, "A big book is a big nuisance."

Curiously, however, early codices "were slow to change the internal characteristics of the scroll. The first bound books were square-shaped, to allow the same number of columns per page as normally showed in a scroll in use" (Levarie, 1968). Both the *Codex Vaticanus* and the *Codex Sinaiticus* (fourth century C.E.) show the influence of the scroll; the pages of the former use three columns of delicate uncials, while the latter customarily employs four columns of uncials.

Not until the fifth century did the codex mostly free itself from the scroll's typographic influence. Books became taller and narrower and tended to feature two columns per page, although some manuscripts utilized only one column. Readers resisted typographic innovation for centuries, in part because they had trouble conceiving of something that might deviate from the ancient norm of the scroll, and partly because they had grown accustomed to that norm.

Are we any different today? Don't most of us find it hard to break out of old patterns? Often we don't even realize how entrenched those patterns have become. If you ever look

at a printed Bible, for example, you're gazing back typographically to the late twelfth or early thirteenth century. That's when scribes first began usingthe thinnest silky vellum. The pages became extremely small. They employed headings at the top of each page, little red and blue initials throughout the text to mark the beginning of each chapter, and the text was now written in black ink in a microscopic script in two columns. The effect was dramatic. The new type of Bible was an absolute bestseller. These tiny manuscripts were evidently sold in vast numbers in the thirteenth century. Bibles were produced in such huge quantities between about 1240 and about 1280 that copies served the needs of all the rest of the Middle Ages [....] More than that, the Bible design master-minded in the early thirteenth century has so fundamentally entered the subconsciousness of all of us that, even now, seven hundred years later, Bibles still look the same (De Hamel, 1995).

You probably know the name of Johann Gutenberg, the man credited with inventing moveable type for printing. History.com puts his fifteenth-century invention first on its list of "11 innovations that changed history" (Andrews, 2012). Even so, Gutenberg's printing press did not immediately sweep away the old system of creating books.

During the second half of the fifteenth century, "the demand for illuminated books [all produced by hand] was greater than ever before [. . . .] Attention is often drawn to the fact that early printed books look very much like manuscripts, the implication being that the printers were deliberately attempting to make them more acceptable to a market accustomed to hand-written books [. . . .] Early printed books were bound to resemble manuscripts simply because there was no other model available for them to follow. Only as printing gradually developed in its own right did it become independent in appearance" (Backhouse, 1979).

Johann Fust, a wealthy banker who had funded Gutenberg's printing experiments, later sued Gutenberg and took control of his business. Fust is the one who made printing a commercial success. Yet when he failed to properly position the innovation in something culturally familiar, he landed briefly in a Paris jail. Fust sold several of his printed Bibles to King Louis XI, but misrepresented them as hand written. When users discovered that all the letters in these Bibles looked identical, and then noted the red ink used ("blood!"), they accused Fust of witchcraft. Only after Fust admitted he had printed the copies and showed the Parisians how his system worked, did he regain his freedom (Daugherty, 2012). Eventually, of course, printing won the day; but not until the public became more familiar and comfortable with it. Could the same be said one day of electronic books?

The Sure Thing that Wasn't

Pundits for decades have predicted the imminent arrival of electronic publishing. Way back in 1945, Vannevar Bush wrote of an imagined device he called a "memex," a machine using ultra high resolution microfilm reels, coupled with multiple screen viewers and cameras, to display a culture's collective memory (Bush, 1945). His concept presaged many elements of the computer age, including hypertext.

In 1962, communication theorist Marshall McLuhan predicted the electronic age would bury the book forever (Darnton, 1999). Later in that decade, Kay conceived of the "Dynabook," a machine featuring a graphical user interface designed to call up multiple educational components useful to improve human learning and understanding (Kay, 1993).

Serious interest in eBooks began in the 1980s with the introduction of home computers. Many publishers wondered what effect these new devices might have on print books, since

a single computer could store hundreds and even thousands of book-length texts. CD-ROM books were thought to have much promise, combining elements of text, video, audio, and other media (Rassoli and Tippins,1997).

By 1992, a *Newsweek* article proclaimed, "Bibliophiles, take cover: the electronic book is on its way." One enthusiast declared, "We're not talking about the future. This is already happening." Yet *Newsweek* admitted, "So far there is a lot more interest in books you use—reference works—than in books you actually read. But before long, 'there will be as many kinds of electronic books as there are conventional books,' says Morton David, CEO of Franklin Electronic Publishers. 'Print has had around 500 years to evolve. We've only been doing it for a few years'" (Rogers, 1992s). Even as late as October 2001, *New Scientist* magazine was telling its readers:

You've heard it all before. Pundits have been predicting the death of books for almost a century. First it was the novelty of moving pictures that was going to kill them off. Then the coming of radio and TV. And when that didn't do the trick, computers and the Internet came along to deliver the killer blow. Well, books are still with us. But for how much longer?

Books as we know them are beginning to feel the squeeze from all sides. Publishers are releasing more and more texts in electronic form—on CD-ROM or the Internet—and e-reader devices are taking off everywhere. "Electronic paper" is finally a reality, too—thin, light and flexible, but instantly refreshable to let you download the latest news or novel. No one is sure yet what final form the e-book will take, or just when it will take over, but it's becoming clear that the way we read is set to change forever (Lillington, 2001).

Lillington wrote these words even as the first eBook "revolution" was sputtering and nearing collapse—demonstrating, if nothing else, that prognosticators touting "sure things" in the world of technology have a notoriously difficult time seeing a few months into the future, let alone years or decades.

So what happened to the first eBook revolution? Why didn't it ignite on cue? Part of the answer—and it's only part, since both economics and technology played large roles in the failure of eBooks to catch on the first time around—is that the target market lacked familiarity with the innovation and so felt too little connection with it. With few exceptions, the public simply didn't resonate with the idea.

Publishers had failed to reckon with that reality, however, especially in the aftermath of a shock they received in 2000. Author Stephen King had alarmed many of them by offering for sale on the Internet, direct to consumers, a sixty-six-page novella called *Riding the Bullet*. Selling it for a paltry $2.50, King garnered more than four hundred thousand downloads in forty-eight hours; he said he made almost half a million dollars on the venture (Anonymous, 2000).

Both authors and publishers alike soon began experimenting with Internet-based books. AOL Time Warner released two hundred eBooks for children, Random House began a publishing partnership with TV's *Sesame Street*, and Simon & Schuster concentrated on eBooks for the "young adult" market.

Fueling this enthusiasm were robust forecasts from industry analysts such as Forrester, which predicted that by 2005 eBooks would account for one-sixth of the U.S. book publishing market. This, despite the fact that less than half of the publishers Forrester had canvassed offered for sale even a solitary eBook. Forrester also predicted that by the same year, one fourth of all university textbooks would be offered in electronic formats

(Lillington, 2001). And Forrester wasn't alone; Andersen Consulting, commissioned by the Association of American Publishers to forecast eBook sales, predicted electronic books would represent ten percent of the total book market by 2005 (Hillesund, 2001). Jupiter Research estimated that in the same period, the numbers of eBook users would grow to 1.9 million. And still another firm, IDC, predicted the U.S. eBook market would grow from $9 million in 2000 to $414 million in 2004 (Hawkins, 2002s).

In the heady days of October 2000, software giant Microsoft held its first annual Frankfurt eBook Awards, giving prizes of up to fifty thousand dollars to authors of digital books. Dick Brass, a Microsoft executive tasked with promoting eBooks, declared, "Someday, when electronic books replace print, these will just be called the book awards" (Kirkpatrick,2002). By year's end, the *New York Times* was telling its readers,

Seldom has a new product generated as much talk and as few sales as electronic books did in the year 2000. And not just talk: major publishers, online booksellers and high-tech middlemen spent hundreds of millions of dollars to lay the groundwork for selling digital books, even though demand for reading books on computer screens remains uncertain to say the least. In the next few years, the book industry's investments will prove either prescient or preposterous (Kirkpatrick, 2000).

Somehow, it did not seem to faze publishers that the then-leading producer of dedicated eBook readers, Gemstar-TV Guide, had two devices on the market that had sold fewer than sixty thousand units by early 2001, despite company declarations that millions would be in circulation. A few months earlier, Gemstar had predicted that within three years their devices would be "capable of storing several titles at once, will cost less than $100 and will weigh just eight ounces" and would be "cheap enough to be given away with magazine subscriptions" (Wittmann, 2000s). It didn't happen. Before the predicted future could arrive, the company pulled its readers from store shelves.

In April 2002, Microsoft also pulled the plug on the Frankfurt eBook awards, announcing instead the formation of a new organization called the International eBook Association, designed to "support the worldwide eBook community and promote the growing opportunities and promise of eBooks." That organization, intended to "facilitate and accelerate the adoption of eBooks" (Anonymous, 2002), also quickly went extinct.

Even before that, by March 2001, much of the hype over eBooks had blown away. The *New York Times* declared:

> Last summer–just about when that big, fat Internet bubble had finally, officially burst–Random House pulled the entrepreneurial equivalent of stumbling into a party with a funny hat and a case of beer at 4:30 a.m., long after everybody had gone to bed. With great fanfare, the famous publishing house grandly announced the debut of an e-book imprint, AtRandom.com.

Now, Random House proclaimed, tech-savvy readers could use their computers to download the prose stylings of writers like Elizabeth Wurtzel, Lewis Lapham, Robert Samuelson, *New Yorker* staff writer Tad Friend and dot-com chronicler Po Bronson. New titles by these authors would be available only as e-books; the publisher would not print hard copies.

It was a big, bold gamble, a thumb in the eye to 546 years of post-Gutenberg publishing. It was also a giant dud.

Six months after Random House's earth-rattling boast, e-books are about as popular as Jar-Jar Binks action figures and Color Me Badd records. With e-book titles such as Ms.

Wurtzel's *Radical Sanity* fizzling on the e-shelves—sales through last week had just cracked 100 copies nationwide—enthusiasm within the publishing world toward e-books has significantly dampened. And now, Random House is reneging on its no-hard-copies pledge: AtRandom.com recently announced that it will offer print versions of its e-books.

"Right now, it's kind of a nonexistent marketplace," said Sam Lipskar, a publishing agent. (Snyder, 2001)

Snyder quoted Gersh Kuntzman, author of *Hair! Mankind's Historic Quest to End Baldness*, as saying, "I do think there is a future for e-books. But there's no present for e-books." The article concluded that, "the promised revolution" of eBooks "will have to wait" (Snyder, 2001).

By November 2001, Random House announced it was done waiting. One of the first New York publishers to launch a line of purely digital books, it became the first to scuttle the venture. The *New York Times* said the closure "demonstrated just how dim the once-luminous prospect of an electronic revolution in reading had become in a little more than year. . . . The size of the market has turned out to be tiny, at least for now" (Kirkpatrick,2001).

By summer 2002, industry observer Donald Hawkins, who two years before had trumpeted the eBook revolution, admitted, "It is now apparent that the e-book shot missed its mark, and the e-book revolution has fizzled. Indeed, it never really got off the ground. The marketplace did not develop as originally predicted" (Hawkins, 2002).

The collapse of the first major commercial eBook effort did not take everyone by surprise. Brian Winston had, just a few years before, questioned the very concept of a "communication technology revolution." Extensive empirical studies had convinced Winston that new technologies usually take longer to develop and become viable than many observers assume. He also contended that the "acceptance and later diffusion of technologies are dependent on supervening social necessities and influenced by cultural and economic forces" (Hillesund, 2013). In other words, successful innovators have to situate their creations in what the target market considers both familiar and accepted. Without that, spending even hundreds of millions of dollars has little chance of success.

An editor for the online magazine *Salon* had identified a big part of the core problem: "If printed books will be replaced in the next 10 years, then what, exactly, will replace them? I'm open to the idea that the p-book can be supplanted, but the alternative, the e-book, remains pretty theoretical in the minds of most avid readers. Ask people to imagine a future in which print books have been usurped, without at the same time providing them with a clear image of the new, improved substitute, and you're asking them to visualize a beloved and enriching pleasure supplanted by—nothing. No wonder it scares them" (Miller, 2000).

Who Prefers an eBook?

Several years after the collapse of the first eBook experiment, a second round of experimentation began in earnest. While many serious technological and economic difficulties had by then been addressed, the cultural hurdles seemed harder to gauge. How would electronic books do the second time around?

In 2009, I did a small but nationwide study investigating consumer interest in eBooks versus paper books. I found that while an overwhelming number of adults surveyed pre-

ferred paper books, no significant demographic factors appeared to predict such a preference (2009). A large percentage of adult book readers, primarily those born at least several years before the beginning phase of Web 2.0 (customarily dating to 1996), appeared to fall into the category of what I called "paper book lovers." This group appeared to resist adopting eBooks and wireless readers, not because of financial deprivation or uncertainty or antipathy toward the innovation, such as often suggested by the theory of the Diffusion of Innovations (DOI), but because its members simply preferred paper books.

While DOI has shed considerable light on who first adopts an innovation and how they lead the way to a wider societal acceptance of a given innovation, it has neglected to shed nearly so much light on why some individuals and groups not only fail to adopt some innovation, but in fact spurn it. By its design, diffusion theory tends to highlight how "consumer beliefs or perceptions of innovation attributes, along with external socioeconomic and media exposures, influence the decision to adopt an innovation" (Vishwanath & Goldhaber, 2003). In some cases, however, a greater focus on late adopters or laggards may reveal information highly significant to anyone interested in promoting an innovation; and overlooking such information can have deleterious consequences for the promoter.

About four decades ago, Uhl stated rightly, "While knowledge of innovators may help secure acceptance among the earliest buyers, an understanding of laggards will help in understanding a product's complete market;" yet in regard to lovers of paper books, his study seemed to miss the mark when it said, "laggards may initially reject and continue to reject certain products for the very reasons that innovators adopt them. . . . It may be that they are repelled by those products which appear to them to be too new, unproven, and risky" (Uhl, 1970). But my study showed that paper book lovers did not seem "repelled" by the new, unproven, or risky nature of eBooks and wireless readers. They simply preferred paper books. Consider a few comments from study participants, explaining why they favored paper books over electronic books:

- Easier on the eyes.
- Nostalgia perhaps. I like to turn pages manually.
- Just feels good to hold a book.
- I can write on it, pass it along to others.
- I like noticing how far into the book I am.
- Like the feel and smell of books.
- A warmer experience.
- Just love real books.

Three years later, I completed a much larger project designed to investigate whether individuals using "enhanced eBooks" (resources utilizing video, audio, interactive graphics, etc.) had any better comprehension of a given body of content than paper book readers, and whether either group showed a greater tendency to be persuaded by the content so delivered. While most participants in the enhanced eBook group expressed pleasure and even delight in the new format, one "outlier" quite proudly described herself as "so old school." She bought only used books, she stated, and tended to read several paper books each week. Whenever she found herself getting bored with the enhanced eBook, which she said happened quite often, she put it down, picked up a physical book on some other topic, and started reading. "I mean," she said, "I was out of that app so quick and doing something else" (Halliday, 2012).

This participant no doubt would endorse Darnton's judgment that the traditional book has "extraordinary staying power." The paper book, he says, is "great for packaging information, convenient to thumb through, comfortable to curl up with, superb for storage, and remarkably resistant to damage. It does not need to be upgraded or downloaded, accessed or booted, plugged into circuits or extracted from webs. Its design makes it a delight to the eye. Its shape makes it a pleasure to hold in the hand. And its handiness has made it the basic tool of learning for thousands of years, even when it had to be unrolled to be read" (Darnton, 1999).

Whatever market gains eBooks may achieve in the future, their producers—like all innovators in whatever field—must continue to effectively situate them in the stream of what the public recognizes as familiar and accepted. Those who manage this skill, will win. And those who don't, won't.

Building an Effective Bridge

When Apple unveiled its iPad in April 2010, the product may have seemed to many observers like a *Star Trek* gizmo, both alien and unfamiliar. Apple therefore unleashed a barrage of advertising efforts intended to make its device seem not only cool and wondrous, but also recognizable and appealing. In a move of genius, Apple bridged the old and the new by showing how this remarkable innovation could take something as familiar and beloved as the classic book *Alice In Wonderland* and make it spring to life. Alice's cherished story, as featured on the iPad's color screen, looked both venerable and recognizable. . . and yet its pages *moved!* On one page, an old pocket watch swung on its fob, responding to every physical move of the iPad. On another page, readers could toss a jar of orange marmalade around with a finger flick. It seemed almost magical, like something out of a *Harry Potter* movie.

Media watchers such as the *Huffington Post* wrote enthusiastic articles with headlines blaring, "Alice in Wonderland iPad App Reinvents Reading." It insisted developers had "created the pop-up book of the 21st-century" (Anonymous, 2010). So how did the public respond?

On the first day the iPad became available for general sale, Apple sold 300,000 units. One month later, sales had risen to a million, and after eighty days, consumers had bought three million (Costello, 2013). By October 2013, the company had sold over 170 million iPads (Hughes, 2013).

While no one, to my knowledge, has tried to determine the precise effect of the *Alice in Wonderland* television campaign on early iPad sales, clearly it didn't hurt. The ad campaign helped to situate a culture-impacting innovation within the stream of a culturally familiar and appealing artifact, and that association helped consumers to frame the new product in a way that prompted millions to want to buy it.

What Might Have Happened?

Remember Edison and his failed phonograph business? His competitors quickly made their machines into beautiful pieces of furniture; Edison did not. His competitors made available to their customers audio recordings of popular artists; Edison disdained such a strategy. "We care nothing for the reputation of the artists, singers or instrumentalists," he scoffed in 1912. "All that we desire is that the voice shall be as perfect as possible" (DeGraaf, 1995).

Whether Edison got his wish is hard to say. Whether his phonograph business succeeded is easier; it didn't. But what might have happened had the inventor looked for ways to help his prospective clients connect this new machine with the familiar surroundings of their homes and lives?

But more to the point: How can you take *your* innovation and create a bridge that consumers can use to easily connect with something familiar and attractive? What's your *Alice in Wonderland?*

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Author's Brief Bio

Steve Halliday is president of Hothouse Enterprises, Inc., an innovative communications company that focuses on collaborative content creation in both traditional book publishing and in the convergent media world. In his thirty-year career, Steve has co-authored and collaborated with many best-selling writers, including a former President of the United States, in addition to writing several books of his own. He holds a Ph.D. in communication from Regent University, where he focused his studies on the possibilities of next-generation digital eBooks. He is currently developing several convergent media resources for multiple markets.

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14 CHRIS WILSON & MICHAEL BROWN

THE BUSINESS OF INVENTION: CONSIDERING PROJECT MANAGEMENT IN THE ARTS AND INDUSTRY

"Being a Project Manager is like being an artist, you have the different colored process streams combining into a work of art" —Greg Cimmarrusti

ABSTRACT Project management has well developed theoretical constructs and is becoming increasingly well established in core strategy beyond the industrial and corporate sectors from which it first emerged. With a concurrent increase in the significance of innovation, project managing for creativity is an area of research and enquiry of considerable significance. Notionally occupying polar opposite cultural positions in terms of perspectives and processes of creativity, project management in the arts is widely considered to vary significantly from corporate strategy and process. If business were to be more generally characterised by 'organisation' and discipline, the arts are more commonly celebrated for disorganisation, indiscipline, and the fundamental challenge to organisation itself. Considering both the confluences and variations between established project management theory in business and practice in the arts, this text introduces theoretical constructs pertaining to creative processes and highlights areas for consideration in the understanding and further development of project management theory.

Keywords: Project management, Creative project management (CPM), Higher Education.

Foreword

This text documents a review of experience gained in the teaching of creative project management (CPM) in a higher education arts context. As is common with programmes in the UK, final year honours degree study is often characterised by project-based activity in scholarship and research, and, in the arts, development of large-scale project work. Consequently, project management skills are routinely taught and assessed and a topic considered and exercised across a broad spectrum of disciplines and subjects and considered as valuable transferable knowledge and skill[1].

There are questions that emerge when considering educational approaches to the development of project management capability in different disciplines. Firstly, recognising that project management itself is a defined area of expertise in its own right, primarily aligned with business, engineering and product design, there is the question of capacity and selection. If project management is a secondary concern in a given area of study—as would ar-

1. The importance attributed to project management was highlighted in the report published by the Economist in 2009 entitled: Closing the gap: the link between project management excellence and long-term success: http://viewswire.eiu.com/report_dl.asp?mode=fi&fi=1865031771.PDF&rf=0

guably be the case with fine art, creative writing, or music composition—the question emerges about what elements of project management theory to introduce and to what depth and detail with displacing core activity. There may also the issue of potential contamination of the core discipline and for selected project management techniques to demonstrate different levels of incompatibility.

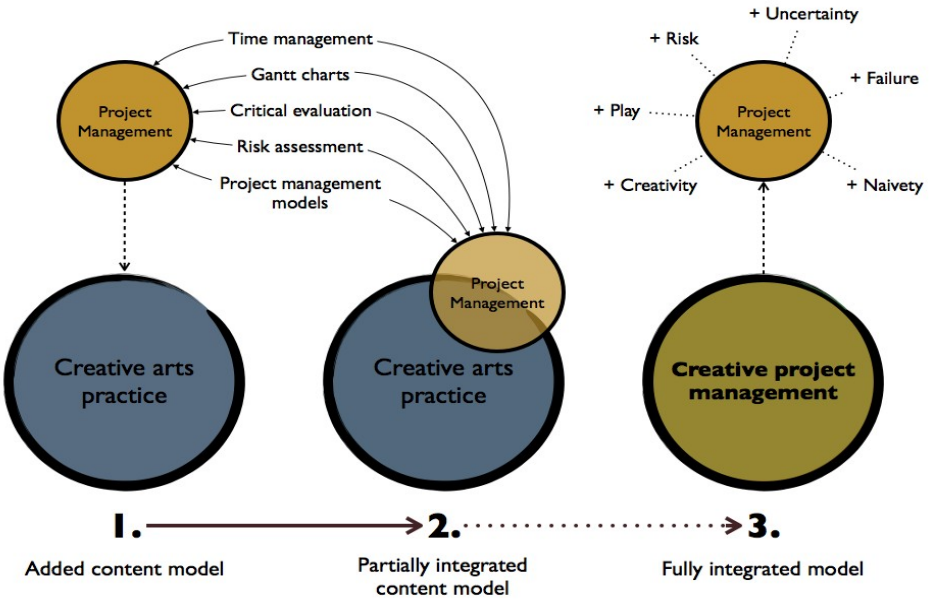

Figure 1: 3 stages of developing an integrated creative project management model

Initially, elements of project management including time management techniques, project planning and Gantt chart development, risk assessment planning and processes of critical evaluation, were introduced into an otherwise focused study of music composition. Represented by stage 1 in the diagram above (Figure 1), elements drawn from different disciplines were adapted or 'bolted on' to an established curriculum. Initially uncertain as to what extent project management theory would translate from business related contexts to creative arts contexts, certain adaptations of language and contextualisation of principles are necessary but value is nevertheless added to the teaching involved in terms of the development of relevant organisational abilities and an increasing level of transferable knowledge and skills.

Over time, and through stage 2 of in the diagram, work has subsequently focused on the professional application and management of creativity, and a more integrated analysis of project management models, their application, and implications both for immediate projects, and for wider personal and professional development. Developing a more integrated approach to the consideration of project management in the context of artistic creativity, aspects of project management theory, rather than considered as a discrete element of creative practice, are developed to become more integral to artistic endeavour. For example, with a concurrent focus on the application of creative thinking techniques and reflective evaluation of creative working practices and methodologies, the focus on project management started to develop insights that contributed to the main focus of study; that of

personal creativity and craft itself. Still considering the relationship between creative practice and project management as only partially integrated, this chapter is an attempt to articulate the move towards a fully integrated model of creative project management (CPM) identified as stage 3.

Whilst project management theory remains primarily confined to business and management in the literature and in higher education curricula globally, opportunities emerge to consider the potential for interdisciplinarity to enrich the understanding of project management and to develop new theoretical insights. A legitimate field of enquiry even if 'nascent' (Garel 2013 citing Blomquist et al., 2010), Söderlund and Maylor (2012) make an explicit claim for the status of project management research to be developed and elevated. Söderlund and Lenfle (2013) also highlight project management history as relatively underexplored and with scope for enrichment. This being the case, the arts appear to be relatively underrepresented in the literature about project management and there is therefore the potential for study of artistic practice to surface insights relevant to business and industry.

Considering project management

The term 'Project Management' carries with it different connotations according to the frame of reference. From the micro to the macro scale, all human endeavour essentially involves an integrated sequence of 'managed projects', ranging from the spontaneous and intuitive processes of real-time operation, repeated and connected patterns of structured behaviours, to wider and more general processes of life management and collective cultural activity.

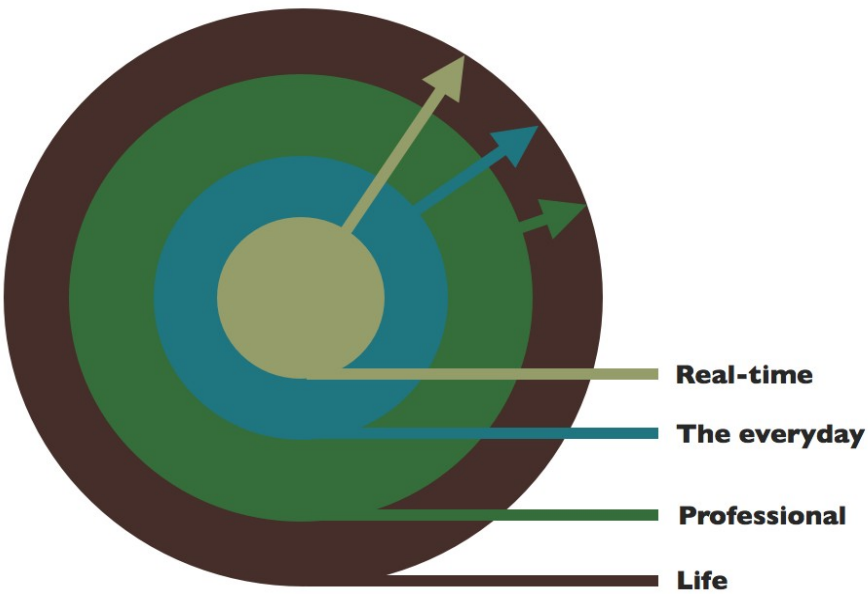

Figure 2: Levels of project management

As an area of human activity, project management has been evident for millennia. The archaeological evidence of large-scale and extraordinarily sophisticated engineering alone demonstrates the longstanding human capacity for coordination and integration of endeavor. The development of project management theory is however far more contemporary and a product of increasingly mechanized and industrialized systems. The specification of 'project management' as a discipline in itself is indeed widely attributed to U.S. Air force general Bernard Schrieve as recently as 1954.

Garel (2013) presents a succinct historical review of the development of project management theory and identifies in particular the distinction between practices and models; "the dual issue of envisaging a future undertaking and the act of making it happen" (2013, 663). Refined through the industrial revolution to embrace organisational processes driven largely by mechanisation and time-keeping, project management has risen to become a defined professional role through the increasing complexity and scale of civil engineering projects and the progressive industrialisation of defence (Kwak in Carayannis et al., 2005). Weaver (2007) also identifies the protestant reformation of the 15th century, including notable architectural innovation (Kozak-Holland & Procter, 2014), associated reductionism, later liberalism and the division of labour, Newtonianism, as significant foundations in the work of Taylor and the emergence of the 'Classical School' of scientific management.

Points of historical significance in the emergence of modern project management are widely documented. Amongst the most commonly cited include the development of graphical systems for the organisation and monitoring of projects including the 'Harmonogram' developed by Karol Adamiecki in 1896 and perhaps the more significant 'Gantt Chart' developed by Henry Gantt in 1912. Used directly in the production of ships during WWI and later in the building of the Hoover dam (1931), Gantt chart techniques and derivatives remain in widespread use. Specific project management methodologies started to emerge in the post-WWII era including the 'Critical Path Method' in 1957, developed by DuPont and Remington Rand to manage chemical plant maintenance; 'Program Evaluation Review Technique' (PERT) in 1958 used to manage the Polaris submarine programme; 'Work Breakdown Structure' in the U.S. military in 1962; Winston Royce's 'Waterfall Method' in 1970; 'Scrum' project management in 1986; PRINCE2, the '7-process' system, in 1996; and more recently, Agile project management emerging from the software sector. The now titled, 'International Project Management Association' was founded in 1965 as the 'International Management Systems Association', and 'The 'Project Management Institute' was founded in 1969, which coincided with the first professional accreditation of project management expertise, and the first project management professionals.

As Weaver (2007) argues, there is a clear distinction between generalised processes of project management and the modern professional discipline of 'Project Management'. The elements in the body of knowledge (BOK) of project management most relevant to artists and creative practitioners, and the extent to which project management theory can underpin effective approaches to the development and realization of creativity remain underexplored. In the context of this analysis, the principle aim is to interrogate first the distinctions between project management approaches—from the recognised professional corporate context, to the most open and liberated forms of artistic expression—both to inform pedagogic research about the development of project management ability as a transferable

graduate attribute, and to develop understanding of how artistic practice might inform creative approaches to project management in other disciplines.

How artists work: creative project management

Whilst there are many artists and creative practitioners famed for their industry, entrepreneurship and organisation—indeed many who have successfully transitioned from creative arts careers into leadership roles in other domains—conceptions of project management in the arts and in industry are generally conceived as differing greatly; framed by fundamentally distinct motivations, parameters, objectives and underlying activities.

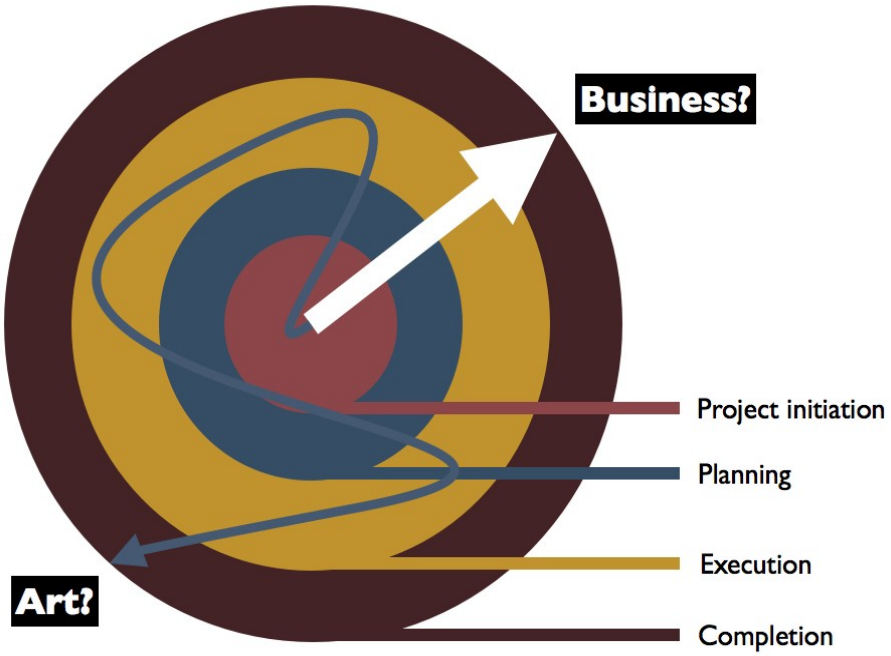

Figure 3: Project management journeys in art and business

The discourse of authenticity in the arts also dictates that any active interest in the exploitation and most certainly commercial application of creative endeavour informing the creative process would irrevocably compromise the integrity of the constructs involved. As Negus (2002) highlights, there is 'enduring distance' between production and consumption of art and well-defined 'cultural intermediary' roles. In other words, 'project management' within the corporate or industrial interpretation is present in the arts but often a component of a wider commercial arts system and practiced outside the artists themselves. If business-related project management were to be characterised by efficiency, focus and planning, artistic practice is often defined by inefficiency, ill discipline and aimlessness.

The reality of project management in the arts is however one divorced from most commonly reinforced cultural narratives surrounding the artistic process. Conceptions of spontaneity, giftedness, excess, against-the-odds and even miraculous discovery litter the un-

derlying 'genius' meme related to the cultural knowledge of the arts, indeed, an inference of the supernatural is by no means uncommon in many areas of artistic mythology and folklore. The idea that artistic expression would emerge from deliberate planning and organisation is often considered the antithesis of art itself.

> *No great artist ever sees things as they really are. If he did, he would cease to be an artist.*
> Oscar Wilde

Whilst the exceptional, the extraordinary and the 'gifted' may provide a richer biographical narrative, there is an underlying and often underplayed graft associated with artistic discipline. Leaving aside the related debates about ability, cognitive predisposition, 'talent', and the 10000 hours rule[2], underpinning all artistic endeavour, hard work is routine, doubt, crisis and suffering are frequent experiences, and invariably some form of systems for managing the development and maintenance of expertise, work and the completion of projects, often extremely productively, are always present.

Notwithstanding a general mythology that permeates the history of artistic invention and expression, the idiosyncratic and the exceptional nevertheless coincide on a considerable number of occasions. As Currey (2013) reveals in an insightful analysis, creative routines are regularly recorded as significant aspects of creative practice in the arts. Indeed, noting often obsessive discipline and protective maintenance of behavioural patterns amongst artists, Currey referred specifically to W.H. Auden's thinking in relating "military precision" of routine with the fundamental development of creativity itself.

As would be expected, working practices vary significantly between artists. There are however both some marked differences of approach and some significant coincidences of behaviours. One seemingly common aspect of working routines is walking; Beethoven, Morton Feldman, Søren Kieerkegaard, Frédéric Chopin, Gustav Mahler, Richard Strauss, and Erik Satie, are amongst many celebrated artists for whom walking was an almost ritualised feature of creative routine. Other commonalities include distinctly pharmacological approaches to the maintenance of daily working energies, and an often-profound focus on the significance of early morning activity (Currey, 2013). However, perhaps the most significant correlation in any analysis of working practice in the arts lies in self-determination.

Evaluating project management models

Distinctions between artistic practice and project management in industry stem primarily from issues of consequence (artistic engineering is not structural engineering), and scale of operation (artistic endeavour invariably operates at smaller scale compared with corporate and engineering contexts). Whilst it is possible consider a spectrum of project management categories according to these distinctions, the aim in this analysis is to interrelate rather than to distinguish.

Breaking project management down to four key stages; 1) Initiation; 2) Planning and Design; 3) Executing; and, 4) Completing; for the purposes of this analysis, Figure 3 (above) broadly characterises an interrelationship between different conceptions of project management processes and stages of development in business, commercial art and free art contexts.

2.First posited by Malcolm Gladwell and challenged by Hambick, D. Z., Oswald, F. L., Altmann, E. M., Meinz, E. J., Gobet, F. & Campitelli, G., (2013) Deliberate practice: Is that all it takes to become an expert? Intelligence, Elsevier: http://dx.doi.org/10.1016/j.intell.2013.04.001.

There are a number of aspects of project management that emerge as being of potential variance when considering relative norms and conventions in art and in industry; *Consequence*, related to the scale and practical context of the project, is perhaps the most notable.

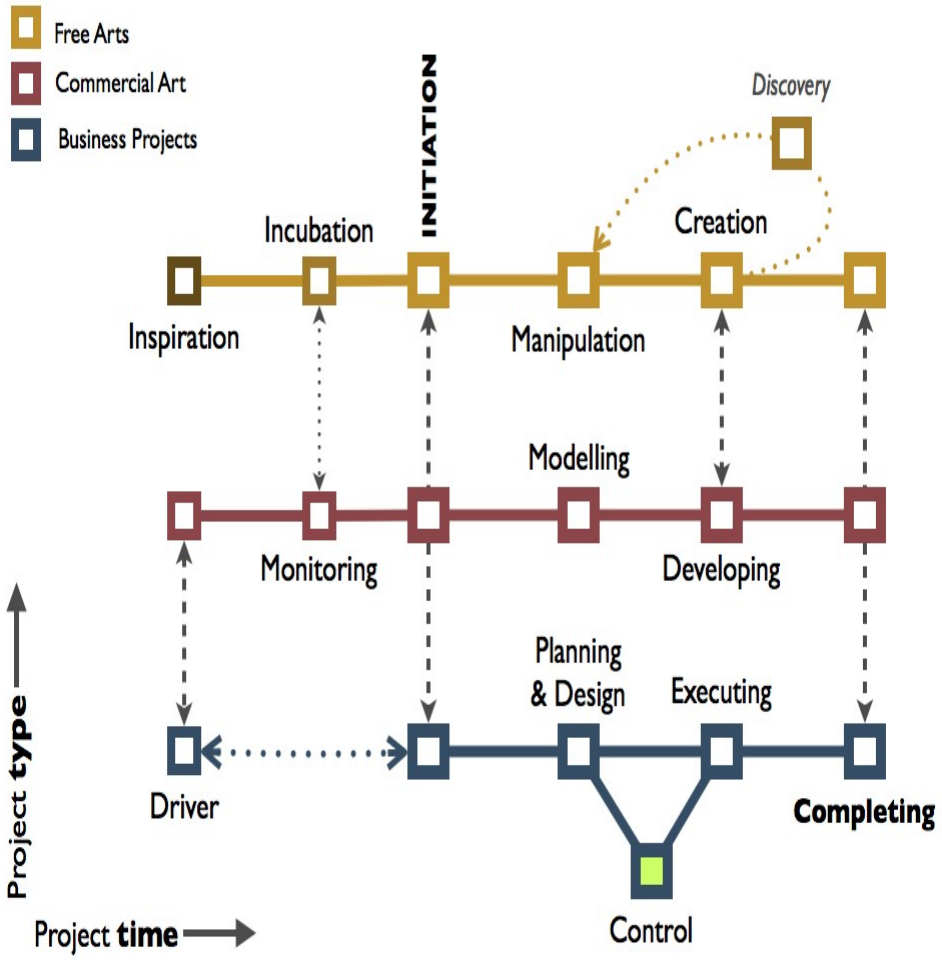

Figure 4: Stages of project management process

The cynical view of art from a purely practical perspective is that art it simply the proverbial process of "firing and arrow and painting a target where it lands"[3]. Whilst to a great extent this is arguably true, and indicative of greater flexibility in many aspects of operation, there are nevertheless considerable constraints if not major consequences surrounding any artistic practice. Indeed, to be recognised for significance in any artistic domain, a considerable number of alignments must be met related to aesthetics, quality, and creativity. Art is by no means a domain 'where anything goes'.

Characterising project management differences more broadly and in extremis, Figure 5 (on page 196) lists a number of concepts with an element of polarity, contrast or correspondence:

3. Originally attributed to Homer Adkins referring to basic research. Later adapted by Brian Eno to define his artistic philosophy.

Industrial project management	Creative project management
Clear destination	Uncertain destination
Clear route (and fallbacks)	Unplanned/vague route
Certainty of aims/outcomes	Uncertain aims/outcomes
Reducing uncertainty	Extending uncertainty
Working with certainty	Working with naivety
Removing uncertainty	Adding uncertainties
Resolving problems	Generating problems
Measured progress	Uncertain progress
Focus on competence	Exploring incompetence
Crisis/opportunity led deviation	Deliberate deviation
Efficiency	Inefficiency
Destination	Journey
Reducing/tackling risk	Increasing/embracing risk
Risk as danger	Risk as opportunity
Profit	Loss
Terminal	Germinal
Obstacle	Purpose
Soft	Hard
Rigidity	Flexibility
Stable	Unstable
Organised	Organic
Predictable	Unpredictable
Busy	Difficult
Exhilarating	Exhausting
Tried-and-tested (proven)	Novelty (unproven)
Familiar (known)	Unfamiliar (unknown)
Order	Disruption
Focus	Blur
Control	Participation
End	Arrival
Completion	Conclusion

Figure 5: Project management journeys in art and business

A routine experience in artistic practice is that of deliberate uncertainty and unstructured exploration of concepts, ideas, materials and technologies. Inherently focused on the search for novelty through inventiveness, artistic projects are predisposed towards the configuration of unfamiliar elements and ideas. Certainty of outcomes is consequently also a factor in project management that can vary significantly depending on context, as are efficiency and constraint by time.

Having identified a number of dynamics in comparing project management experience in business and the arts, the underlying question regarding the development of appropriate *creative project management* techniques (Figure 1, page 190) is framed by a series of key apparent variations. Rather than consider project management as a means of 'solving' problems related to inefficiency or organisation in the arts, the intention is to recognize the potential significance of activities in one domain notionally at odds with the requirements of another.

One such example is *risk*. In Figure 6 (below), the characterization of diminishing risk—and indeed the underlying imperative to reduce risk as quickly and as efficiently as possible in the commercial sector—is contrasted by the capacity and the tolerance for higher levels of risk throughout the development of projects in the arts.

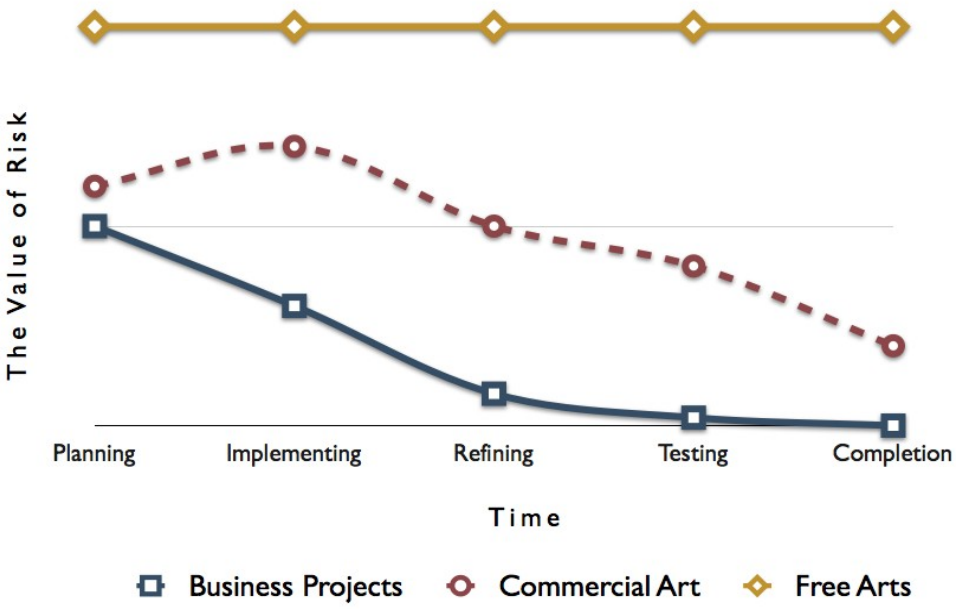

Figure 6: The value of risk over time in project management

One can envisage a series of other *Y*-axis related to certainty of outcomes, satisfaction with progress, competence, focus, deviation, or organisation. In each case the question emerges as to whether project management techniques can provide value to creative practice or might they potentially compromise either the operation or the integrity of the art the emerges given the apparent variations of experiences.

The recent history of project management theory has adjusted significantly in the face of new communication technologies and digital industries. Asynchronous and networked project activities have become more common and the transformative impact of digital tech-

nologies has led to functioning team size in many areas of project management activity becoming lean and localised. In some respects this has inaugurated as collapse in the obvious distinctions between artistic projects and professionally 'project managed' projects in that scale, pace, tools and dynamics are moving closer together in many respects.

For example, Petit (2012) and others recognise the significance of uncertainty in project management theory and the dynamics of flexibility and adaptability. Project management in the arts being perhaps more synonymous with process-based project management methods in business, project management systems including *Scrum* (Sutherland, 2004)—developing the work of Takeuchi and Nonaka (1986)—represent a progressive move towards more dynamic approaches to project management; more integrated, adaptive and responsive, and a project management methodology more synonymous with artistic practice.

> *Without the element of uncertainty, the bringing off of even, the greatest business triumph would be dull, routine, and eminently unsatisfying*
> J. Paul Getty

Pryke's 2005 project management analysis also reveals considerable resonance with artistic disciplines, namely, that any multiagency project, any group-based act of human endeavour, is subject to the vagaries and complexities of human behaviour and inter-personal contact. Citing Nohria and Eccles (1992) and their 'five reasons for taking a network perspective', a more cultural perspective of organisational project management is again presented that resonates sympathetically with practice in the arts.

Summary and conclusions

There are clearly rational and justifiable reasons why approaches to project management would and should differ between the open and consequence free environment of personal artistic expression and complex engineering projects operating within clear and considerable constraints and on vastly different scales. However, not only do even the most divergent processes incorporate elements of commonality and significant confluence of methodology and sequence of activities, there are areas in which the arts can enrich the most corporate of environments and where industry can inform creative practice and application in significant ways.

Figure 7 (See below) represents an initial adaptation of Alleman's agile project management to model introducing 'Risk', 'Experiment' and 'Play' into the project dynamics. Significant in any successful artistic work, the explicit reference to these in the context of project design was a first step towards more integrated models. Given the resonance between scrum project management and that of ensemble music practice and creative musicianship in general, more agile methodology appeared to be a natural first step. As outlined in the foreword to this text, the underlying aim in this analysis is to work towards a fully integrated model of creative project management; a framework that adds value to the discipline of artistic endeavour without compromising the integrity of artistic process and outcomes.

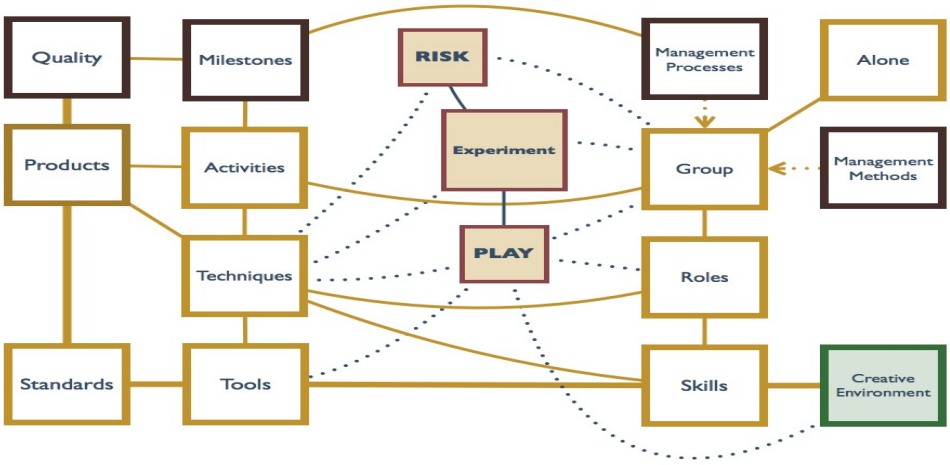

Figure 7: Adapted Agile Project management model[4]

Whilst useful in illuminating potential lines of ongoing research for project management in terms of flexibility and capacity for creativity, and effective in supporting learning and teaching in creative project management contexts, Figure 7 represents a transition between stages 2 and 3 in Figure 1. In order to develop an effective framework for the teaching of project management to fully embrace creativity and inventiveness, practice in the arts has been more centralised and elements from project management theory and the body of knowledge (BOK) incorporated and adapted.

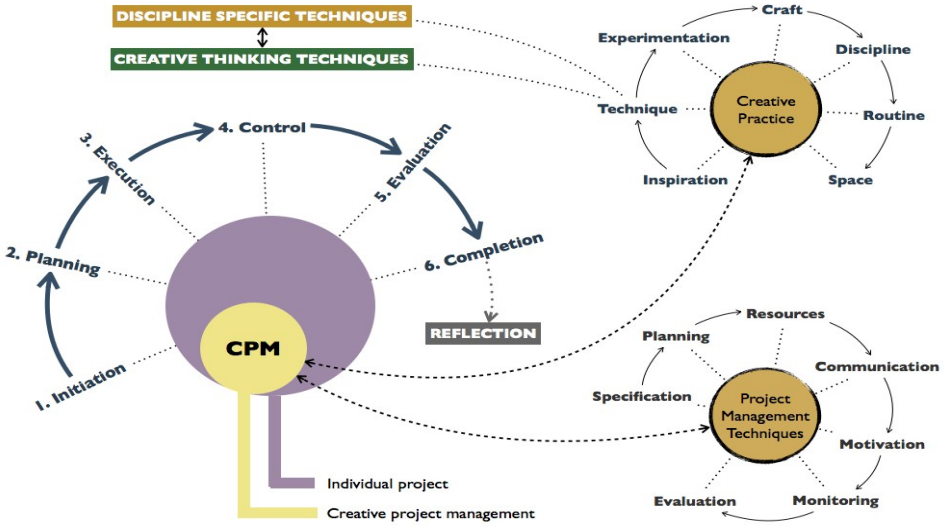

Figure 8: Creative project management (CPM) outline model

There remains much to be explored with respect to the influence of art on project management theory but the model developed in Figure 8 is a first step towards a fully integrated model. There is much to be gained through the interrelationship between art and science, business and free expression. The correct balance between discipline and indiscipline, focus

4. *Adapted from Alleman, G. B., in Carayannis & Kwak, 2002.*

and experimentation, open and closed, fast and slow (Kahneman, 2011), may be perpetually out of reach, but the search remains rich with possibilities.

> *"We all operate in two contrasting modes, which might be called open and closed. The open mode is more relaxed, more receptive, more exploratory, more democratic, more playful and more humorous. The closed mode is the tighter, more rigid, more hierarchical, more tunnel-visioned. Most people unfortunately spend most of their time in the closed mode.*
>
> *Not that the closed mode cannot be helpful. If you are leaping a ravine, the moment of takeoff is a bad time for considering alternative strategies. When you charge the enemy machine-gun post, don't waste energy trying to see the funny side of it. Do it in the "closed" mode.*
>
> *But the moment the action is over, try to return to the "open" mode - to open your mind again to all the feedback from our action that enables us to tell whether the action has been successful, or whether further action is need to improve on what we have done. In other words, we must return to the open mode, because in that mode we are the most aware, most receptive, most creative, and therefore at our most intelligent."*
> John Cleese

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15 ELISABETTA FRICK, STEFANO TARDINI & LORENZO CANTONI

LEGO SERIOUS PLAY APPLICATIONS TO ENHANCE CREATIVITY IN PARTICIPATORY DESIGN

ABSTRACT The aim of this paper is to present two specific applications of the LEGO® SERIOUS PLAY® (LSP) methodology that have been designed at USI Università della Svizzera italiana (Lugano, Switzerland). LSP was developed in the mid-1990s as a process to enhance innovation within companies. The method originally consisted of three applications: *Real Time Identity for You*, *Real Time Strategy for the Team* and *Real Time Strategy for the Enterprise*. USI has further developed the methodology proposing two more applications: *User Requirements with LEGO* (URL), and *LEGO Learning Experience Design* (LLED). Based on this experience, USI is also taking part in S-Play, a project that aims at adapting the LSP method to the requirements of SMEs training.

Keywords: LEGO SERIOUS PLAY, creative thinking, serious games, co-design

Introduction

According to one of its founders, LEGO® SERIOUS PLAY® (LSP) is a methodology used to "accomplish such tasks as constructing a metaphorical 3D model of your business in a playful manner. Doing so will unleash creative imagination to develop an innovative and dynamic business strategy based on a clearer sense of a company's identity" (Rasmussen Consulting, 2012). In this paper, the methodology is first presented with regard to its history, official applications, basic principles, and theoretical foundations. Then, two specific applications of LSP, *User Requirements with LEGO* (URL), and *LEGO Learning Experience Design* (LLED) are introduced and described. These applications have been thought and designed by some researchers at the Faculty of Communication Sciences of Università della Svizzera italiana (USI, Lugano, Switzerland). Further on, the EU-funded project *S-Play - Lego Serious Play for SMEs* is presented. The main goals and achievements of S-Play are exposed. In the literature review section, a selection of publications about LSP is analyzed. Some use cases in different contexts are also mentioned. Finally, the findings of a survey for LSP facilitators in Europe are presented. The goal of the survey was to get a detailed overview on LSP usage in Europe.

About Lego Serious Play

This section mainly refers to the *White Paper on Lego® Serious Play® – A state of the art of its applications in Europe* (Frick, Tardini & Cantoni, 2013), which was published as a first deliv-

erable of the S-Play project. LSP is a facilitated workshop where participants respond to tasks by building symbolic and metaphorical models with LEGO bricks and present them to the other participants (Kristiansen, Hansen & Nielsen, 2009, p. 78). The LSP methodology was officially launched in 2002, but its history dates back to the mid-1990s. At that time, the LEGO Company was facing the big challenge of new toys entering the market, such as videogames. The owner and CEO of LEGO was dissatisfied with the results of the strategy-development sessions with his staff: their business was about imagination, but the results of these sessions were all but imaginative (Rasmussen, 2006; Kristiansen, Hansen & Nielsen, 2009). LEGO decided to fund research on this problem and created a separate subsidiary, the Executive Discovery. Thanks to the contribution of Johann Roos and Bart Victor, two professors at the International Institute for Management Development (IMD) in Lausanne (Switzerland), and – later – of Robert Rasmussen, who was director of research and development for the educational division of LEGO Company, the Executive Discovery brought the methodology to market in the early 2000s. Some years later, the Executive Discovery was merged to LEGO itself. In 2010, LEGO launched a community-based business model for LSP.

The standard applications of the Lego Serious Play method are three:

1. *Real Time Identity for You*, whose goal is to allow participants to understand themselves and their colleagues better;
2. *Real Time Strategy for the Team*, which aims at unlocking the full potential of a team quickly, effectively, and deeply;
3. *Real Time Strategy for the Enterprise*, a process to continuously develop strategies in an unpredictable world.

Until 2009, these were the only possible applications of LSP. However, after the shift to the community-based business model, the basic principles and philosophy of LSP became open source, so that the methodology can be now used in a more flexible way. This means that each facilitator is free either to use one of the three standard applications or to design workshops following his/her own needs.

In general, Lego Serious Play offers means for a group to: share ideas, assumptions and understandings; engage in a rich dialogue and discussion; work out meaningful solutions to problems. In addition, LSP naturally pushes participants to be creative and to find out-of-the-box solutions.

An LSP workshop is a structured process where participants are asked to use LEGO bricks to build models representing their thoughts, reflections and ideas. The workshop is always led by a facilitator, who has the task to guide participants through the activities. An LSP workshop usually involves 6 to 10 participants and can last a half-day as well as a couple of days, depending on its goals and structure. The Core Process of LSP consists of four essential steps:

1. *Posing the question:* The facilitator gives a specific challenge to all participants.
2. *Build metaphorical models:* Participants build their answer to the challenge using LEGO bricks. While building their models, participants assign a meaning to them and develop a story covering the meaning.
3. *Sharing:* Participants share their stories with the other participants and listen to the others' stories.
4. *Reflection:* The facilitator encourages participants to reflect on what they have heard and seen in the models.

Lego Serious Play is based on a set of basic assumptions, which are:

- *Everyone has a voice.* Everyone within an organization or a group can contribute to the discussion, and help generate solutions.
- *Think with your hands.* Doing together with reflecting instead of just thinking, can enhance understanding and creativity.
- *The answer is in the system.* No one in the group has the answer to the challenge (neither the facilitator nor the group's leader).
- *There is no ONE right answer.* Different views and different perceptions are a good thing, and must be pointed out during the workshop.

The LSP method is underpinned by some key theories and concepts, which are shortly mentioned hereafter:

- The concept of play, and in particular, of *adult play in organizations*. In the work context, play is "an intentional gathering of participants who want to use their imagination, agree that they are not directly producing a product or service, and agree to follow a special set of rules" (Rasmussen Consulting, 2012).
- *Storytelling* and the use of *metaphors*, which are both key components of play. Storytelling is "a fully active and concrete endeavor. As active participants, we step in and out of the process to elaborate, refine, or evaluate the characters, the setting, or the plot, as we go along" (Rasmussen Consulting, 2012).
- *Constructivism* (Piaget, 1936) and its extended version developed by Papert (1986), *constructionism*. These theories state that learning is more effective when people construct something tangible in the real world.
- The *flow model* of Mihaly Csíkszentmihályi (1975) shows how the mental state of a person engaged in a specific activity can change depending on the challenge level and skill level. During a LSP workshop participants often reach the optimal level of engagement when they are in a 'hands on' process. This is what Csikszentmihalyi calls 'flow'.
- The *interconnection between the brain and the hands*. Using the hands to build 3D-models of pieces of knowledge, ideas and feelings is "a primordial way that the brain uses to construct its own knowledge of the world" (Rasmussen Consulting, 2012).

Further developments at USI

Since 2006, some researchers at USI Università della Svizzera italiana (Lugano, Switzerland) have started to develop new applications of the Lego Serious Play methodology.

URL—User Requirements with LEGO

URL—User Requirements with *LEGO* is an application of LSP, which supports the definition of strategies in online communication. The design of this specific application came from a real need encountered by the researchers of NewMinE Lab (www.newmine.org) and webatelier.net (www.webatelier.net), two laboratories of the Faculty of Communication Sciences at USI.

When it comes to create an application for online communication (i.e., build a new company website, re-design an existing one, develop a mobile app, etc.) stakeholders have to work collaboratively in the early stage to define the application's requirements (requirements elicitation). In this stage, stakeholders should start thinking on aspects such

as the basic design of the application, its users, contents and goals. Ideally, at the end of this stage, stakeholders should share a common understanding of a web application's requirements. However, often this is not the case: usually, involved stakeholders are professionals coming from several company units (executives, management, communication, corporate identity, marketing, sales, IT, etc.), thus making this common understanding an arduous task. Sometimes, these interactions end up generating confusion, due to misunderstandings, rather than a clear and shared understanding.

URL has been designed to overcome this kind of difficulties. The method is based on the Online Communication Model (OCM), which describes the communicative elements of an online communication application (Cantoni & Tardini, 2006, pp. 98-100). URL helps in finding requirements that usually do not emerge using other methodologies. For this reason, URL has to be intended as an additional methodology, used besides formal and structured strategies (such as interviews, focus groups, etc.). In an URL workshop, participants have to build LEGO models of:

- their role (how they think they can contribute to the project);
- a typical user of the web application; a content of the web application;
- a functionality of the web application.

Then, they create connections among the models, create a common landscape with all the models, and reflect on it. The generated common landscape can then be used as a basis to start the design of the online communication application. In May 2011, a guide was published, which presents the methodology and how to use it (Cantoni et al., 2011).

LLED—LEGO Learning Experience Design

Another specific application of LSP is currently under development at eLab, the eLearning service of USI (www.elearninglab.org): *LLED – LEGO Learning Experience Design*. Goal of a LLED workshop is to support instructional designers in the planning of a learning experience (a course, a program, a whole curriculum, etc.). The basic assumption of LLED is that a learning experience (a lecture, a course, a program, etc.) can be designed in a creatively and collaboratively way, and involving all the stakeholders of the project (co-design/participatory design): teachers, managers, former or future students/participants, tutors, eLearning specialists, and so on. In a LLED workshop, participants are asked to build models of:

- a relevant characteristic of the prospective student;
- a learning objective or a content of the learning experience (piece of knowledge, ability, skills, attitude);
- a teaching strategy or any other organizational aspect.

Figure 1: "Knowledge transfer", a model built during a LLED session

The design of this application is currently underway, also thanks to the S-Play project. A LLED pilot workshop has been run in April 2014. Aim of the workshop is to redesign an existing professional training program for hoteliers and tourist operators.

The S-Play project

S-Play - Lego Serious Play for SMEs (www.s-play.e), is a 2-years project funded by the European Union under the Lifelong Learning Program (LLP) – Leonardo da Vinci – Transfer of Innovation.

S-Play involves six organizations from five EU countries representing Research & Development, Small and Medium Enterprises (SMEs), Education and the IT sector: University of Information Technology & Management of Rzeszow (Poland), Università della Svizzera italiana (USI, Lugano, Switzerland), Foundation for Research & Technology-Hellas (FORTH) in Greece, IHK-Projektgesellschaft mbH in Ostbrandenburg (Germany), University of Durham (United Kingdom), and Wirtualis Sp. z o. o. (Poland).

The main goal of S-Play is to adapt the LSP applications developed at USI (URL and LLED) to the requirements of small and medium enterprises (SMEs), and to design new LSP applications for SMEs. The project has the following objectives:

- To adapt the LSP methods and LLED guidelines to the needs of SMEs.
- To raise awareness and popularize LSP methods among Vocational Education and Training (VET) organizations and trainers, business support organizations, associations of enterprises, etc.
- To raise the awareness of SMEs about the need to increase the competencies of owners and staff, which could be done through innovative and attractive approaches such as LSP.

The first achievement of the S-Play project is the *state-of-the-art analysis* about LSP in Europe, which includes a review of the scientific literature about LSP, a survey among LSP European facilitators and the publication of the White Paper (see below). The second main achievement is the design of four LSP workshops specific for SMEs. Each workshop has been thought for specific goals, which are:

1. *Identifying training needs.* Goal of this workshop is to help in identifying training needs of the employees of a SME.
2. *Designing a training program.* Goal of this workshop is to help understand how to develop a training program, which meets the training needs.
3. *Reaching New Markets.* Goal of this workshop is to help an SME to focus its strategy on reaching new markets.
4. *Creating scope for innovation.* Goal of this workshop is to help an SME to focus its strategy on creating environment to support innovation and increase innovation capability.

These four workshops are now being tested in all project partner' countries (Germany, Greece, Poland, Switzerland and United Kingdom). Workshops are running in national languages with a small group of participants of the same SME or with a cluster of different SMEs in the same business.

The final product of S-Play will be an online tool for VET instructional designers or any other interested parties throughout Europe who would like to facilitate LSP workshops for

small and medium enterprises. The online tool is intended to be a full package for facilitators containing:

- An introduction to the LSP methodology and its theoretical basis.
- A full description of the S-Play project and its goals.
- A presentation of the four LSP workshops for SMEs, their goals and a detailed roadmap for each of them. Some guidelines for the "skills building" phase.
- A practical checklist for the workshop preparation and for the preparation of the final report. A downloadable facilitators' handbook.

Literature review

In the *White Paper on LEGO® SERIOUS PLAY® – A state of the art of its applications in Europe* (Frick, Tardini & Cantoni, 2013), a review of the scientific literature about LSP has been presented. Hereafter, a summarized version of this literature review is presented. People who are interested in the complete review and list of publications are invited to consult the *White Paper* and its references section.

The official document about the LSP method is the "Open Source Introduction to LEGO SERIOUS PLAY", which is available on the Lego Serious Play websit under a Creative Commons license. This document, published in 2010, focuses on the basic principles and philosophy of LSP: the core process, the etiquette, the skills buildings, the metaphors, the role of the facilitator, etc. The document aims at presenting the methodology giving a general overview, but it does not provide a detailed roadmap for specific LSP applications. However, an example of how a workshop can be designed and structured is offered (pp. 36 -37).

All the theories that are at the basis of LSP are presented in details in different publications of the Imagination Lab (www.imagilab.or). The Imagination Lab was an independent and non-profit research foundation based in Lausanne. It was founded by Johan Roos (one of the creators of LSP) in 2000 and was active until 2006. This Lab published a series of working paper and of short publications for practitioner reporting the finding of the Lasb's research about serious play in organizations.

Other publications presenting the LSP methodology, its basic principles, its core process, the benefits, etc. have been published by Rasmussen (2006), Kristiansen et al. (2009), Schulz & Geithner (2011). Some publications present one or more use cases and concrete applications of LSP. LSP has been mainly used with several telecommunications companies (Bürgi et al., 2001; Jacobs & Statler, 2004; Oliver & Jacobs, 2004; Bürgi & Roos, 2003) and, specifically its application for the organizational identity, in different multinational companies (packaging, chemistry and software fields) (Oliver & Roos 2003, 2004). LSP has also been used in a Swiss bank (Jacobs & Heracleous, 2004), at the LEGO company (Roos et al., 2004) and within the NHS – National Health Service in United Kingdom (Swann, 2011).

Finally, some use cases in the academic or research field are also available (Frick, Tardini & Cantoni, 2013, p.14). In these fields, LSP has been used to:

- articulate the learning autobiographies, current situations, orientations to learning, and aspirations of students;
- better understand the needs, interests and aptitudes of students as a starting point for designing personalized learning;

- awaken students' creative energies and spur innovation;
- increase confidence of students in the ability to be creative;
- improve communication/collaboration and providing a new approach focused on idea generation and innovation;
- open a specific lecture (as an "ice-breaker" exercise in the classroom);
- build the students' view on their working place;
- better introduce new students or overseas students;
- explore research topics and methods.

LSP in Europe

In May 2013, in the context of the S-Play project, a survey among LSP facilitators in Europe was run, in order to investigate how this methodology is used by them. Its results have been presented in details in the *White Paper on Lego® Serious Play® – A state of the art of its applications in Europe* (Frick, Tardini & Cantoni, 2013). The aim of the survey was to understand who are the European LSP practitioners, how and what they are using LSP for, and which LSP applications are most used. The survey was run through an online questionnaire, which received 84 full responses. Most of the respondents were from UK, Denmark, Germany and the Netherlands. The large majority (92.9%) of them own an official LSP trainer certificate, delivered by an LSP Master Trainer.

The respondents were both independent workers (61.9%) and employed by a company (47.6%). Facilitators who declared to be employed in a company were asked to provide the company name: through this answer a list of 52 different European companies providing LSP services has been drawn up. When it comes to the use of LSP, 88.1% of respondents indicated that they use or have used the application Real Time Strategy, 77.4% Real Time Identity, 48.8% other applications (see Figure 2). "The high percentage of respondents who have indicated the alternative applications prove that the method in these last years has become more flexible and that many facilitators create their own customized LSP workshops" (Frick, Tardini & Cantoni, 2013, p.17).

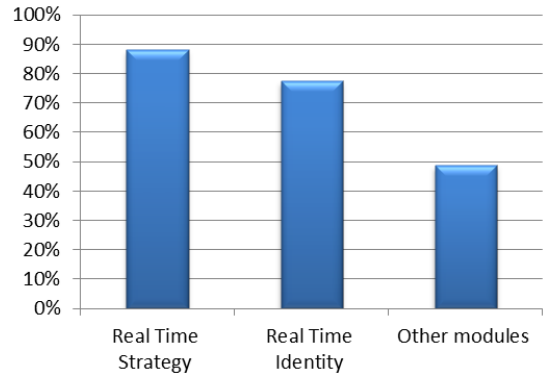

Figure 2: LSP applications used

Among the "other modules" facilitators mentioned several personalized applications, such as workshops for team building and team development, for teaching /education, for research and projects, for coaching and for business models.

Respondents were also asked to indicate which business sectors their clients come from. 60.7% of them have applied LSP in the educational field, 40.5% in the manufacturing field and 36.9% in the Public Administration. Among the other fields respondents mentioned: pharmaceuticals, universities, media, information & technology, design, entertainment, IT aviation, arts, non-profit organizations, life sciences, food industry, finance, banks. As for the size of client companies of European LSP facilitators, 65.5% of respondents work or have worked with large companies (more than 250 employees), 54.8% with medium ones (up to 250 employees), 51.2% with small companies (up to 50 employees), and 40.5% with micro-entities with 10 employees or less.

Conclusions and further developments

Lego Serious Play is a powerful methodology, which helps in fostering creativity and innovation within companies. The use of LSP is spreading more and more. The survey run among European facilitators showed that LSP community is wide and active. However, LSP is not popular only in Europe: in recent years, the methodology is spreading very rapidly also in Latin America. A new survey will be run in the next months with Latin American LSP facilitators. Although LSP was originally designed for big companies, it has been found that some facilitators are already using it with SMEs. However, trying to establish some applications specifically for SMEs could increase its diffusion among them. The results of the pilot workshops that are being run in the S-Play project will help to establish such applications for SMEs.

Authors' Brief Bios

Elisabetta Frick is a scientific collaborator at eLab, the eLearning laboratory of Università della Svizzera italiana (USI, Lugano, Switzerland). Elisabetta holds a Bachelor degree in Educational Sciences and Philosophy and a Master in Comparative and intercultural Education. In addition to the support and training activity for teachers and teaching assistants, she has been involved in several projects related to ICT in education. She contributed in instructional design activities for developing eLearning platforms and blended learning courses. Since 2011, she is interested in LEGO SERIOUS PLAY methodology. She collaborated in the writing of the URL (User Requirements with Lego) Manual and she obtained the official LSP certification in 2013.

Stefano Tardini is the executive director of eLab, the eLearning Lab of Università della Svizzera italiana (USI, Lugano, Switzerland). His research interests lie in the overlap between (ICT mediated) communication, eLearning, (online) communities, cultural semiotics and argumentation theory. In 2002, he discussed his Ph.D. thesis about the linguistic and semiotic aspects of virtual communities. From then on he developed his research in three overlapping directions: in the field of CMC (focusing mainly on a socio-historical approach to CMC), of eLearning and of online communities and social networks (elaborating a semiotic approach to online communities). He is a certified LEGO SERIOUS PLAY facilitator since 2013.

Lorenzo Cantoni is full professor at the Università della Svizzera italiana (USI, Lugano, Switzerland), Faculty of Communication Sciences. He is Dean of the Faculty and director of the Institute for Communication Technologies. He is scientific director of the laboratories webatelier.net, NewMinE Lab: New Media in Education Lab, and eLab: eLearning Lab. His research interests are where communication, education and new media overlap, ranging from computer mediated communication to usability, from eLearning to eTourism, and from ICT4D to eGovernment. Lorenzo Cantoni is research professor at the Center for International Health Services Research & Policy, in the Washington State University. Prof. Cantoni is also director of the *UNESCO Chair in ICT to develop and promote sustainable tourism in the World Heritage Sites* at USI, and president of IFITT, International Federation for Information Technologies in Travel and Tourism.

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16 PATRICK A. VAN DER DUIN & MIKE SHULMEISTER

DEVELOPING LOCAL POLICIES FOR INITIATING AND IMPLEMENTING CREATIVE-SECTOR BASED CROSS-INNOVATIONS: FINDINGS FROM THE AMSTERDAM-REGION

ABSTRACT *Cross-innovations are very important for the transition from an 'innovation economy to a 'creative society'. This requires that local governmental innovation policies regarding the initiation and development of cross-innovations also change. Although the creative industry in the Amsterdam-region is not performing badly, modernizing their cross-innovation policy is necessary and means that they have to pay more attention to 'grand societal challenges', shift the focus and innovation policy resources to latter phases of the innovation process, consider the creative sector as diametrically opposed to other sectors, support creative companies in getting their business ideas financed, and introduce the concept of the 'creative worker' to make other industries more creative.*

Keywords: cross-innovation, innovation policy, cross-over, Amsterdam, creative industry

Introduction

The creative industry is an important industry for the Dutch economy and for Amsterdam in particular. The creative industry is "a driving force behind various economic and social processes (Rutten, Marlet and Van Oort, 2011). To further develop this industry and to support the transition from an 'innovation economy' to a 'creative society', more focus should be put on so-called 'cross-innovations', i.e., innovative co-creation between the creative industry and other industries. Therefore, governmental policy regarding this industry should also make a next step.

In this paper we analyse the current innovation policies of the city of Amsterdam with regard to cross-innovation and formulate recommendations by which those policies can be made more suitable for supporting the initiation and development of cross-innovations.

Our research activities for this paper took place from April 2012 until July 2014 in the framework of the Interreg IVC-project "Promoting Cross-Innovation in European Cities and Regions", together with cities such as Birmingham, Berlin, Lisbon, Stockholm, Tallinn, and Warsaw. The goal of this project was to exchange best practices and experiences with regard to cross-innovations with these cities. As part of the project we interviewed five Dutch experts on the creative industry, we organized a workshop with innovation-experts from the Amsterdam-region, we visited several cities participating in the project, and we analyzed several governmental documents on innovation policy in the creative industry.

The current 'creative industry'—innovation system of the Amsterdam-region

The Amsterdam region has many different organisations (actors) involved with innovation in the creative industry having different roles: developing innovation policies, setting up new business, providing various types of support to new businesses, developing new knowledge upon which new businesses can be built. A selection of the most important innovation actors:

Type of innovation actor	Actors
Education	University of Amsterdam, Free University of Amsterdam, Gerrit Rietveld Academy, Universities of Applied Science in Amsterdam (both on business and arts), Various schools involved with new media and design
Multinationals	Endemol, Spilgames, MTV Networks, LBI, Sanoma, Microsoft, Wolters Kluwer, Eyeworks, RTL
SMEs	Marcel Wanders Studio, Guerila Games, Fabirque, Frog Design, Unstudio, Droog, Mojo
Events	IDFA, Holland Festival, Picnic, Cinekid, IBC, ADE
Art and culture	Stedelijk Museum, Rijksmuseum, Van Gogh Museum, Hermitage, FOAM, Carré, Concertgebouw

Table 1: Important actors in the creative industry in the Amsterdam region.

If we look at the several relationships between these 'innovation actors' this industry appears to be very complex:

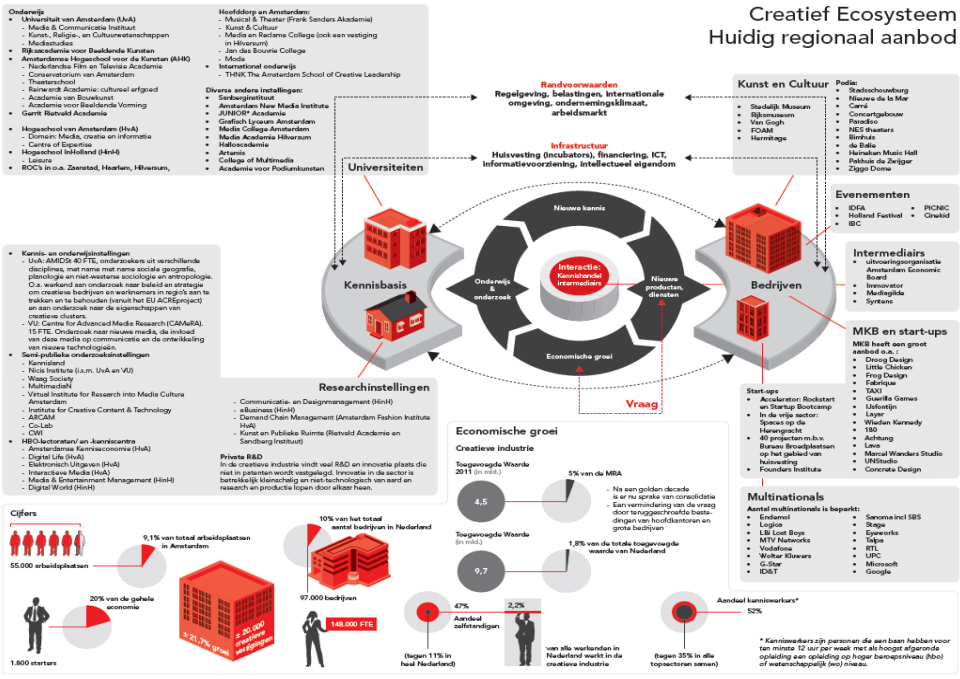

Figure 1: the 'eco-system' of the creative industry in the Amsterdam Metropolitan Region.

Table 1 and Figure 1 show that Amsterdam has many actors on the 'soft side' of cross-innovation but that actors involved with 'hard technology' are somewhat underrepresented. The current initiative to set up the Amsterdam Metropolitan Solutions institute is a first attempt to fill this hole. Nevertheless, the soft sciences can be a valuable input for cross-innovation and a source of inspiration for technology-based (cross-) innovations (Interview with Rens Bod).

Defining cross-innovation

Next we define *cross-innovation* (or *cross-over*) by first defining *innovation* identifying six elements:

1. The amount of newness and change: some innovations cause *radical* changes in market and society (e.g., the car, or Internet), others have less impact and mainly can be interpreted as simple extensions of products and services that were already in place (e.g., airbag) (*incremental* innovations).
2. Process: various activities need to be carried out to ensure that an idea or a patent for an innovation is ultimately implemented into the market or society. All these activities together form the innovation process.
3. Implementation: An innovation can only be called as such if it is commercially available and has impact on market and/or society. Everything before implementation into a market is not an innovation but (merely) an idea of an innovation, a patent, or a business case.
4. Broad view: innovation is much more than new technology embodied in new products. Innovation has become much more intangible, meaning that 'soft' elements such as business models or design can be of strategic importance to developing innovations.
5. Interconnection: innovations are often depended on each other for being implemented. For instance, to enable the development and use of electric cars it is required to develop other innovations such as a different kind of engine, to install charging stations, and to have new business models.
6. Uncertainty and creativity: innovation processes are inherently uncertain because one cannot upfront predict how the innovation will look like and how successful it will be. Innovation processes therefore require creativity, necessary to address this uncertainty and, vice versa, creativity is the cause of uncertainty.

Since cross-innovation results of linkages between the creative industry and other industries, the interconnection-element is important. Indeed, innovations often come from different industries: Google was not set up by Yellow Pages, and computer games were not invented by Mattel. Industries are difficult to separate, and companies from different industries often cooperate in developing new products and services (innovation). For example, Philips and Sara Lee together developed the *Senseo* (figure 2).

Figure 2: The Senseo, a coffee machine developed together by Philips and Sara Lee.

Cooperation with regard to cross-innovation between different companies in different industries can have various forms (see also Enkel & Gassmann, 2010):

1. Cross-innovation as an output or application—to be used/applied
2. Cross-innovation as a process innovation—Used in a company's 'production' process
3. Cross-innovation as an enabler—as a tool in an innovation process
4. *'True'* cross-innovation—Cooperation/merging of the creative industry and other industries

These four different forms of cooperation range from a simple way of cooperation (basically a 'classical buyer-supplier relationship) (no.1, 2, and 3) to a much more complex type of cooperation (no.4) in which different companies from different industries, including the creative industry, are developing innovations, Because of the intensity and strong linkage between the different companies from the different industries, as described in no.4, we can state that the output of these joint innovation processes can be called *cross-innovations*. So, based on the above we define cross-innovation as:

> *the process and implementation of new products, services, processes, organizations, and business models developed in close cooperation by various organizations (profit and/or non-profit) from the creative industry and other types of industries, and that address one or more societal challenges.*

We will explain in a later paragraph why we include 'societal challenges' in this definition.

A fine example of a cross-innovation in the Amsterdam region is the 'SmartGate' which is a serious game which has the goal to inform how the various involved actors are related to the logistic flows at Airport Schiphol and how to optimize these flows. This case has been developed by a creative industry company (IJsfontein, a game company) together with Schiphol (an airport).

Figure 3: the 'SmartGate'

In addition we consider the concept of cross-innovation as part of a wider class of innovations that are at the crossroad of different industries:

1.Cross-overs
a.New product consists of existing products: e.g., mobile phone + camera
b.Product in industry A is taken over by industry B: e.g., gas stations selling flowers, food etc.

2. Transsectoral innovations
"Risky, deliberate, often technological innovation in companies, based on the ideas gath ered from outside its own industry, developed with the support of organizations which are not part of the daily business, and which lead to a new paradigm with regard to production and doing business in this industry" (EIM, 2005, p.8)

3. Spill-overs
Positive (negative) effects of industry A on Industry B: using innovations makes you more innovative (e.g., process innovations)

4. Enabling technology (also: general purpose technology)
For instance, ICT is an enabling technology for many industries (e.g., finance, logistics, entertainment).

Our definition of cross-innovation is more close to cross-overs and transsectoral innovations on the condition that the creative industry is included, than to spill-overs and enabling technology. Cross-innovation are good examples of the notion of 'Neue Kombinationen' as Joseph Schumpeter once proposed in 1934.

The creative industry and cross-innovation infrastructure in Amsterdam

General

The Dutch government has assigned the creative industry as one of the so-called 'top-industries'. These top industries are regarded as the most important industries for the Netherlands, that is, industries that should become more innovative in the future and become 'core businesses' of the Dutch economy. These industries get additional funding from the government and various innovation projects between organizations from these industries and various knowledge institutes are currently being set up. The top-industry 'Creative industry' does not only focus on the industry itself but also tries to connect to other (top-)industries, making these industries more innovative and trying to convince them that they can profit from the skills and knowledge of the creative industries (Federation Dutch Creative Industries, 2013). Unfortunately, that is from an innovation-policy perspective, they do this mainly by providing (inspiring) examples of *cross-innovations* instead of providing clear-cut policy recommendations.

Nevertheless, the creative industry is still being regarded by many business people and organizations as a 'strange' industry. Often the added value of this industry, its high variety of companies, its low degree of organization, its low dependence on R&D and fundamental research, and the average small size of these companies gives this industry, to many, an immature image (Interview with Valerie Frissen). In addition, this image also prevents this

industry to be seen as an industry with which other industries can cooperate and improve their innovativeness, as noted by one of the heads of the creative industry (Interview with Valerie Frissen). However, this industry has shown in the Netherlands, especially compared to other industries, a significant (relative) growth in terms of jobs, the establishment of new companies, and, less significantly turnover in the period 2008-2011(Rutten, Koops & Nieuwenhuis, 2012). With regard to the worsening of the creative industry in these terms in the last two years (2012-2013), mainly due to the economic and financial crisis which seems to last longer in the Netherlands than in comparable European countries (such as Belgium and Germany), we note that the average turnover per employee in the creative industry is lower than in many other industries. But this can mainly be explained by the labour-intensive character of the creative industry. In addition, with regard to the growth of the number of companies we see that the creative industry has a significantly higher growth than other industries. Within the creative industry, 'media and entertainment' and 'creative business services' are the most dominant domains.

If we look at the size of the creative industry in Amsterdam we see the same trend, although the numbers are of course a bit smaller. In 2012, 53,041 people were employed in this industry, with 26,236 locations, and with a turnover (added value) of 1,366 Billion € in 2008 (Amsterdam 2012). All these three variables show an increase over the last year so that we can conclude that the creative industry is increasing in Amsterdam, just as in the Netherlands as a whole, although the current economic crisis is slowing down things a bit.
A recent study into the creative industry in Amsterdam underlines the above mentioned points and concludes that Amsterdam is indeed the most important 'creative hub' in the Netherlands, in particular design, digital media, fashions, and advertisement, that the level of employment has increased more than the total creative industry in terms of turnover, that the economic crisis has impact, that there is increasing flexibility and digitalization, and, lastly, that sustainability is becoming more and more important (Amsterdam, 2013).

Specific

Policies on the creativity industries and issues and activities in Amsterdam related to this industry are quite various. From an overview made by the city of Amsterdam (Amsterdam 2012) we can conclude that of the 11 polices taken into account, only three did not address the issue of crossovers (or cross-innovations). So, we can conclude that cross-innovations are definitely part of the innovation policy-agenda of Amsterdam. Below we analyze the 'cross-innovation'-infrastructure of Amsterdam on four aspects: brokerage (between industries), finance, cultural, and spaces.

Brokerage

An open minded culture, together with a heterogeneous economy ensures that different industries are able to connect with each other. The Amsterdam Economic Board (part of the municipality of Amsterdam) has an important task in this connection process since it serves seven different industries and stimulates those to cooperate. Just as information and communication technology can cross-innovation be regarded as an industry that squares other industries. This means that cross-innovation is not limited to connecting the creative industry to just one industry but to, in principle, any industry, and that the creative industry will be in many cases not be just a supplier but a partner or co-creator.

Finance

Amsterdam has a big financial centre but the current economic and financial crisis is having a severe impact on this industry. Several banks have downsized their activities and their working staff and the amount of credit provided to business, especially SMEs, has decreased tremendously. As a result the economy is slowing down and, at the same time, entrepreneurs and SMEs are looking for alternative ways to finance their business development projects. Crowdfunding, the practice of funding a project or venture by raising many small amounts of money from a large number of people, typically via the Internet, is, perhaps, therefore a means that is becoming increasingly popular to use to collect credit to finance your business activities. In a recent study by Douw&Koren and Motivaction (October 2013) about how citizens think about the potential of crowdfunding, it showed that 57% of the respondents consider crowdfunding as a good alternative to financing by banks, 46% consider crowdfunding as supportive to the restoration of trust (confidence) in our economy, and 45% holds the opinion that the government should stimulate crowdfunding initiatives. According to another report by Douw&Koren for the Ministry of Economic Affairs in 2012 11.4 million Euros was raised by crowdfunding and for 2015 it was predicted that this amount of money will grow to 250 million euro. Also from a more qualitative perspective it appears that crowdfunding will have a prominent position in the financial landscape. A report by VNIU refers to the slogan 'Everyone should become a banker' and provides many examples of crowdfunding platforms. In addition they see the crowdfunding-trend as part of a wider change in the financial landscape including the rise of complementary currencies and other peer-to-peer services (like car renting and car sharing) (VNIU, 2012).

Cultural

With culture we refer to all concrete artistic activities that people and organizations carry out within an institutional context. Activities such as sport and private artistic activities (e.g., playing piano at home) are not included. Amsterdam has always been the cultural capital of the Netherlands. It is an important historical explanation for why the creative industry is so large as compared to other cities or regions in the Netherlands. Nevertheless, despite the many initiatives in the cultural sector it is not necessary the case that these initiatives are naturally followed by new initiatives with regard to cross-innovations. Of course, the cultural sector can establish a 'climate' in which people get inspired and get creative and are willing to set up new creative businesses. But one should be aware that this linkage is difficult to prove. Especially with regard to the evaluation of innovation policies in general and cross-innovation policies in particular, investments in the cultural sector are difficult to link to innovation and therefore receive a lot of criticism from those involved with defending and promoting commercial interests. The creative industry can play a vital role in defending the use and necessity of the cultural industry, not only from a cultural perspective but also from a cross-innovation perspective since entrepreneurs are convinced that a lively cultural sector is important for their industry and for the overall well-being of the city they live in and in which they want to do business.

Spaces

Amsterdam has initiated quite a lot of policy-initiatives on this issue (see Bureau Broedplaatsen, 2012). A reason could be that it might be the most easy, direct and visible way to stimulate companies and entrepreneurs to set up cross-innovation initiatives. From the innovation policy related documents we have read we have the feeling that this type of policy has reached its saturation point. That is, the provision of spaces for creative entrepreneurs is mainly organized by commercial companies meaning that they have more or less taken over the role of Amsterdam. Nevertheless, the current economic crises and its bad consequences for the real estate industry in Amsterdam can lead to Amsterdam taking up again a more extensive role in this field of policy.

Lessons learned for Amsterdam from other European cities

Within the INTERREG-project we visited three cities (Talinn, Warsaw, and Lisbon) to learn about what might work and what might not work in Amsterdam. We visited various incubators and other 'creative places' where cross-innovations were initiated and we spoke to entrepreneurs and policy-makers. Below is a summary of our lessons learned.

Talinn

- Visiting an exhibition about famous Estonian astronomers and other special products from Estonia taught us that showing national products is not a regrettable nationalistic attitude (as it is in the Netherlands), but a smart way to expose your skills and knowledge to other people while entertaining them at the same time.
- An incubator aimed at design-companies would be more than welcome in Amsterdam if, however, sufficient attention is paid to promoting cooperation between the different startups.
- The Enterprise Estonian-project[1] showed us that these types of innovation programs can also be outsourced to external organizations instead of being carried out by local government themselves. Furthermore, it is focused more on entrepreneurs than Dutch government-innovation programs which are more focused on large companies and industries.
- A potential conflict between artists and entrepreneurs can take place since artists prefer their artistic freedom above possible commercial interests. Many artists will not oppose if their artistic 'products' are also valuable for commercial organizations but if that means that their work will only be acceptable under these terms, they will be not be willing to cooperate in the future. Indeed, we think that artists will have a greater commercial benefit if they keep their artistic freedom.

Warsaw

- Having no governmental or legal rules within a designated (physical) 'creative area' (as we visited in Warsaw) can very much contribute to all kinds of spontaneous entrepre-

1. http://www.eas.ee/en

neurial initiatives. Nevertheless, despite the spontaneous nature of this project, we think that at a certain point they need a future vision to make sure that the growth of this area will be sustainable.

- To us it was important to note that the situation in Warsaw is quite different from Amsterdam in that Warsaw is by far the most important economic region of Poland, whereas in the Netherlands there are various important economic regions next to Amsterdam (such as Rotterdam, Eindhoven, and Utrecht). This means that in Warsaw more resources and funding are available and the links between the national government and the municipality are shorter and easier to realize.

Lisbon

- Defining a business idea is not the most difficult part but to develop and implement a viable business model is the greatest challenge. Local innovation policy should therefore devote more attention to this aspect.
- Between the creative industry and other industries there are differences in terms of the 'business language', types of knowledge, and how to approach customers. For instance, the creative industry has difficulties in 'proving' how to make money and therefore it is extremely difficult to get sufficient financial support of banks who think in old-fashioned business models.
- The creative industry can play an important role in the development of 'creative cities', shifting the focus from (boring) techno-parks to creative cities in which people find it both very pleasant to work and live.

Findings and recommendations for the Amsterdam-region

Based on our interviews, city-visits, an expert-workshop, and analysing relevant policy documents we formulate seven recommendations for improving innovation policy within the Amsterdam region with regard to initiating and developing creativity-sector-based cross-innovation.

1 Cross-innovation really needs to be defined as *innovation*, meaning that we only speak about cross-innovation if cross-innovation types of products and services are implemented into the market. For governmental policy this means that the success rate of cross-innovation policies can be measured by, for instance, the amount of implemented cross-innovations supported by the local government. This means a significant shift from an input-based policy (with indicators such as the amount of companies that have been linked with each other (*matchmaking*) to output-based policy.
2 If we adopt this definition of cross-innovation with an emphasis on implementation, we also advise *to shift the focus and the accompanying innovation policy resources* (e.g., money, man power) more to the later phases of the cross-innovation process (Workshop Amsterdam Economic Board, 2013). In the first phases of the cross-innovation process, the so-called 'ideation'-phase the main activities are finding potential business partners, brainstorming, defining innovating cross-innovation concepts, and building prototypes.

Although the first phases are not easy, in general they require fewer resources than the latter phases of the cross-innovation process where the activities are more focused on doing pilots and working on the actual implementation of the cross-innovation. However, the further companies go into the cross-innovation process, the closer they get to the moment of (market) implementation, the more resources and support they need. However, currently, most of the innovation policy resources are devoted to the first phases of the cross-innovation process where cross-innovation initiatives by various companies do not need much support as opposed to the latter phases where, as just has been stated, more efforts are required.

3 Due to the economic and financial crisis the Amsterdam-region has less budget for developing and implementing innovation policies, despite the acknowledged importance of (cross-) innovation for promoting economic growth. *We recommend focusing the required limited policy efforts on those cross-innovation initiatives that not only are interesting from a commercial perspective but also address a societal goal.* By this, we prevent that the benefits of too many cross-innovation initiatives accrue only to a limited set of people (those involved in the development of the cross-innovation) instead of to a larger community. In doing this, we address two problems at the same time: lower economic growth and increasing societal problems. To do this, the Amsterdam-region can use the 'grand challenges' as they have been described in the Lund-declaration. For these challenges to be applicable to the Amsterdam-region these (international) challenges need to be redefined on a geographical scale that is in line with the Amsterdam-region. Furthermore, it will probably show that certain grand challenges do not directly apply to the Amsterdam-region, regardless of on which scale these are defined. In particular we advise the city of Amsterdam to incorporate these societal demands and challenges in the development of the Amsterdam Metropolitan Solutions Institute (AMS). The goal of this new initiative is to use applied technology for addressing city-specific goals thereby strengthening the innovative and economic power of Amsterdam and its region. By asking potential partners to incorporate these grand challenges in their research plans the specific societal problems and issues are addressed as well. However, to assess these plans on this aspect the city of Amsterdam should translate the 'grand challenges' into local challenges or demands. That is, the grand challenges are currently defined at a global scale and to be applicable to the local situation in Amsterdam they must be formulated at a more specific level of detail. Moreover, it has to be determined which grand challenges are the most relevant to the specific situation in Amsterdam. Nevertheless, during a few workshops with participants from the city of Amsterdam and related organizations involved with innovation, it was suggested that using the grand challenges as a starting point for cross-innovation might be too narrow and as a result certain innovation opportunities will not be spotted (Workshop Amsterdam Economic Board, 2013). This concern of missing opportunities is based on the (correct) notion that (cross-) innovation processes are inherently uncertain. Therefore, innovation policy-makers at the city of Amsterdam should balance the need for focus of the innovation policies with the possible unexpected outcomes of innovation processes and that might not be entirely within that predefined focus. Another consideration on this issue, that might sharpen the focus of the innovation policy, is to concentrate on those grand challenges that connect to your economic and innovative strengths (Interview with Dany Jacobs).

4 To overcome the negative influence of the polarization of the innovation policy in the Amsterdam-region *we suggest considering cross-innovation as a sector in itself.* As a sector that is diametrically opposed to the other top-industries. As such, the creative industry can show its added value to other industries by facilitating initiatives between industries (see also Economic Development Board Amsterdam, March 2011). For this, the creative industry must also communicate to both industries and the Dutch national government that 'real' innovation often takes place at the crossroads of different industries. The creative industry can help these industries both from a process-side (by facilitating these innovation processes) and a content-side (by providing good, fresh ideas and creativity-related technologies, such as gaming-technology). As such the creative industry can help those industries that have difficulties in becoming more innovative. Be aware that it is not only a matter of connecting the creative industry to the 'traditional' industries, but also, or perhaps more, the other way around (Workshop Amsterdam Economic Board, 2013; Interview with Edwin Oskam).

5 *Cross-innovation can also be a way for the creative industry to address the problem of finding financial support for their innovation activities*. That is, it shows that the financial industry still finds it difficult to understand the business of the creative industry and to assess its potential economic and financial value. Innovation alliances between companies from the creative industry and companies from other industries can give creative companies better and easier access to financial capital because companies from non-creative industries are more trustworthy than creative companies. Financial institutions have experience in doing business with traditional industries and find the creative industry too risky to provide quick and easy access to their capital.

6 If the city of Amsterdam has the true ambition to promote cross-innovations by linking the creative industry with other industries, *it should also pay attentions to 'creative workers'*. According to a study done by Lee & Rodriquez-Pose (Lee & Rodriquez-Pose, 2013) governmental innovation policy should aim much more on 'creative workers' than on the creative industry itself. That is, creative workers are not only to be found in the creative industry itself, but also in other industries in which various employees carry out 'creative tasks'. By just focusing on the creative industry, the cross-innovation policy in particular and the policy focused on the creative industry in general of Amsterdam would not be directed fully to the right recipients. Strengthening the creative industry would therefore also mean focusing on creative workers in other industries. In addition, according to the study by Lee & Rodriquez-Pose, a strong relation can be found to the presence and amount of 'creative workers' and the level of innovation in that industry. This link is even stronger than between the creative industry and innovation.

7 Besides the role of the creative industry as juxtaposed to other economic industries (sectors), the creative industry can also be positioned between the cultural sector and economic industries such as finance, retail, informatics, logistics, and food. As such, the creative industry functions as an intermediary translating the insights and productions from the cultural domain into possible new business ideas not only for its own industry but especially for the other economic industries. An almost direct and linear line can be drawn from the cultural domain, through the creative industry to the other economic industries. It would be tempting to reverse this line and ask economic industries what they would like to have for business opportunities and on the basis of that the creative

industry could approach the cultural sector. But we don't think that this would be a wise strategy because this would endanger the 'artistic freedom'. And it is this artistic freedom by which the 'cultural expert' can show its added value to the creative and other industries. Just like how the 'scientific freedom' of scientists can add value to innovation businesses because scientists have all the freedom and independence to think about new and fundamental research. Too much influence on their scientific agenda means that their output does not lead to radical innovations but merely to incremental innovations.

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Dr. Patrick van der Duin is assistant professor at Delft University of Technology in the Netherlands and associate professor Futures Research & Trendwatching at Fontys University of Applied Sciences. He focuses on technology, management of innovation and futures studies. Among others, he has previously worked as futurist in the private sector.

Mike Shulmeister is Clustermanager Creative Industries Amsterdam Area at the Amsterdam Economic Board and is a facilitator to promote mutual cooperation between knowledge institutions, commerce and industry, and government and social organisations in the Amsterdam region. In particular, he is responsible for stimulating Digital Media (gaming, mobile, internet) start-& grownups's with finding capital, staff, knowlegde, partners ect.

Notes on the interviewees

- Interview with Valerie Frissen (TNO, professor at Erasmus University, member board Top-sector Creative Industry).
- Interview with Dany Jacobs (full professor at the University of Amsterdam and associate professor at the professional universities of Arnhem and Nijmegen).
- Interview with Edwin Oskam (civil servant at the city of Amsterdam, responsible for the coordination of activities regarding knowledge and innovation, human capital, and international connectivity, as well as for the articulation of the strategic direction of the Amsterdam Economic Board).
- Interview with Marike ter Linden (civil servant city of Amsterdam, responsible for managing the portfolio of innovation projects).
- Interview with Rens Bod (Professor of Computational and Digital Humanities, Director of Center for Digital Humanities, Head Language and Computation Group, Vice-director ILLC, University of Amsterdam).

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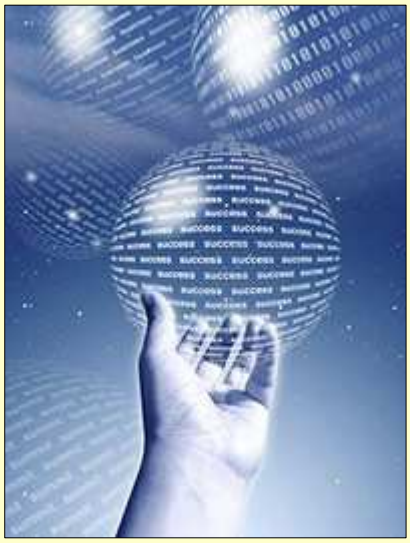

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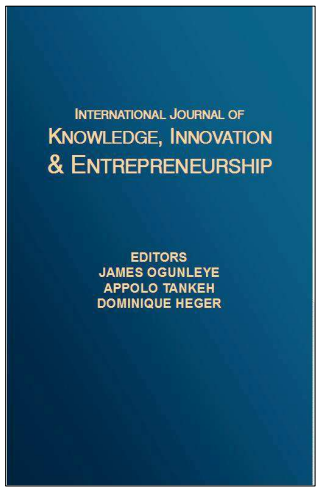

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