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The Creativity of Culture and the Culture of Creativity Research: The Promise of Integrative Transdisciplinarity

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Introduction

In an increasingly complex, networked, and rapidly changing world, creativity has taken a central role (Dortier 2015; Runco 2004). There is enormous interest in creativity in education, business, technology research, and emerging fields such as social innovation and design. Coupled with a proliferation of popular as well as academic discourses of creativity, this situation presents researchers with complex, multidimensional challenges that cannot be addressed exclusively from the perspective of one discipline. This new global context requires a transdisciplinary exploration of creativity, particularly since the articulation, expression, and practice of creativity appear to be in flux in society as well as in academia. The networked society, generational differences, and the focus on business innovation have turned attention to collaborative, distributed forms of creativity that have only recently begun to be studied systematically.

How is a complex and important phenomenon like creativity to be approached under these conditions? Traditionally, research has followed a *paradigm of simplification* along with a strategy of specialization and

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differentiation, leading to the creation of new disciplines and subdisciplines, such as the psychology of creativity. The psychology of creativity has generated vital and all-too-often ignored research, but in the process it has, like all new disciplines and subdisciplines, decontextualized its subject and operated as relatively closed systems (Hennessey 2015). The challenge now is to continue with specialized research and to also reconnect the many strands of research on creativity (in sociology, philosophy, cultural studies, feminism, etc.) that are often working in isolation. The complexity of creativity in changing times, researched across a plurality of often non-communicating disciplines, requires the development of new kinds of scholars, transdisciplinary researchers whose task is to focus on the creative integration of existing research.

We begin by outlining some of the global changes of our times, and the parallel changes in the expression of creativity, explore some of the connections between creativity research and complexity theory and then articulate some of the characteristics and challenges of Integrative Transdisciplinarity.

The Centrality of Creativity in a Postnormal Era

Global society is in a transitional time, a "postnormal" era: we live in an *interregnum* between one dying world, variously known as modernity or the Industrial Age, and an emerging age whose outlines are not yet clear. Ours is an era marked by chaos, contradictions, and complexity (Sardar 2010, 2015).

A postnormal world struggles with the challenges of postmodernity and the postmodern condition, but with the added complexity of the recent emergence of a more networked and even more unstable world. All that was once "solid," from jobs to gender roles to economic and political institutions, has become "liquid" and ever-changing (Bauman 2005, 2007). The world is becoming increasingly Heraclitean, requiring creativity to adapt to constant change (Bauman 2007; Montuori 2011). The postnormal confusion and the failure of some of the central tenets and institutions of modernity make creativity central for the development of new alternatives and the creation of new worlds.

In the first decade of the twenty-first century, creativity and innovation are viewed as central for the "new" economy, for leadership, for education, and indeed for creating and re-creating one's life in a rapidly changing world (Bauman 2008; Elliott 2013; Marshall and Kinser 2012; Robinson 2001). Futurists consider creativity essential for what they perceive as the transition from the end of modernity to a new era (Ogilvy 2002). Florida (p. 6) wrote that "creativity has become the most prized commodity in our economy"

(Florida 2002), and Microsoft's Bill Gates has promoted Creative Capitalism as the solution for the world's problems (Gates 2008).

The new "creative" economy is marked by innovation, and particularly "game-changing," "disruptive" innovation. Schumpeterian "creative destruction" of the old is championed by "creative entrepreneurs" (Christensen 2013), although the long-term implications of this process are far from clear, and most likely very mixed. The call for "sustainability" in business and life addresses the damaging effects of the industrial age, and while the disruptive innovation of postnormal times seems to be clearing away some of the industrial debris, there often appear to be few criteria beyond an unbridled lust for lucrative commercial innovation.

A whole new socioeconomic category has allegedly emerged, a post-materialist "*creative class*," consisting of individuals of a certain economic standing for whom creative expression in the workplace and in life is essential (Florida 2002; Inglehart 1997). The focus on innovation in industry has led to broader, more contextual and multileveled approaches to creativity research that take an expanded view of the creative process and its actors because of the larger organizational process of moving from idea generation to bringing products to market (Catmull 2008; Purser and Montuori 1999; Woodman et al. 1993).

An Emerging Creative Culture of Interconnectedness

"Radical connectivity" (Mele 2013) is the result of a digital revolution that is changing the world (Zagalo and Branco 2015). "Digital natives" (born after 1980) have grown up in world that is interconnected and networked in ways that were inconceivable for their parents (Castells 2009). They have also grown up with the critique of the great man and the lone genius, what Glăveanu calls the He-paradigm (Glăveanu 2010). Digital natives have grown up in a post-Watergate, post-Mao era when leaders and presidents are rarely idolized, and there is much less emphasis on "stars" than in previous generations (Brown 2014; Taylor 2014). It is perhaps no surprise that their attitudes about creativity and innovation are also different. Digital natives lean strongly toward what Glăveanu calls the We-paradigm, more social, relational, and systemic, reflecting the new generation's experience of interconnectedness.

Some social theorists and demographers are proposing that the Western world as a whole is experiencing a generational shift from "I" to "We" (Greenberg and Weber 2008; Leadbeter 2009; Strauss and Howe 2009;

Williams and Drew 2012). If baby boomers were focused on "I," the Me generation, as Tom Wolfe named them (Wolfe 1976), obsessed with themselves, with their "potential," their identity, and their specialness, then the "Millennials" are the "We" generation: more relational, more oriented toward to the public good, moving through life in "tribes" rather than as lone individuals. Nevertheless, demonstrating appropriate postnormal contradiction, the millennial generation has also been described as "Generation Me," or narcissistic and self-absorbed (Twenge 2006). This may be the result of the limitations of traditional categorizations of culture and self-society relations. This complexity is not limited to the West. In traditionally collectivist China, younger generations seem to be more individualistically oriented, and creating their own peculiar amalgam of identities (Cameron et al. 2013),

What seems clear is that the "who" and "where" of creativity seem to be shifting from an exclusive focus on the lone genius in the arts and sciences, to a more distributed view. In the recent popular as well as academic discourse, there appears to be an interesting relationship between individual "everyone, everyday, everywhere" creativity (Montuori and Donnelly 2013b; Richards 2007b), and collaborative, distributed creativity (Glăveanu 2014a), between Glăveanu's I- and We-paradigms of creativity (Glăveanu 2010). Younger generations see creativity as a much more everyday (personal, mundane, rather than "eminent"), collaborative process (Gardner and Davis 2013; Montuori and Donnelly 2013b; Pachucki et al. 2010). Creativity is no longer exclusively viewed as occurring in the arts and sciences. New developments such as social innovation (Mulgan 2006) focus on the application of creativity to social issues. The outcomes and benefits are intended for society as a whole rather than purely for individuals (Phills et al. 2008). The emergence of "design" as an academic discipline points to an increasing marriage of aesthetics and innovation (Heskett 2005). Popular books focus on the application of creativity to "creating one's life," and other more "everyday" topics (Richards 2007a, b; Runco and Richards 1997).

New collaborative technologies are changing the discourse and practices of creativity and innovation, with dramatic consequences (Gauntlett 2011; Kozinets et al. 2008). In the new "participatory culture" of the arts and entertainment (Jenkins 2009), the traditional top-down model, from "active" artist to "passive" audience, has been replaced by feedback loops of interaction and participation. Fans are actively engaged through the use of new media. One way to illustrate the shift from the top-down culture to the participatory culture and illustrate the both and nature of the new relationship between "self and social," is through a comparison between two culturally and generationally iconic events, Woodstock and Burning Man. At Woodstock,

the audience came to listen to the artists, the musical stars. At Burning Man, the participants *are* the stars, contributing to the event in a creative way individually, through their appearance, through "everyday" activities that take the form of individual performance art, and the way they collaborate in the creation of the unique structures and features of their "camps" (Jones 2011). If the music of the Woodstock era was often punctuated by classic guitar solos displaying individual virtuosity, the music of the Burning Man era replaces the guitar solo with sing-along chants.

The Complexity of Creativity Research

The complexification of the who, how, and where of creativity is accompanied by a burgeoning research on creativity and innovation. Creativity is explicitly addressed in many disciplines, most notably in psychology and sociology. Important discussions of creativity are also found in theology (Fox 2004; Kaufman 2004), philosophy (Casey 2000; Kearney 1988), marketing (Hemetsberger and Reinhardt 2008), organizational theory and management (George 2007; Von Hippel 2005), anthropology (Bateson 2001), education (Plucker et al. 2004; Robinson 2001), physics (Bohm 2004; Peat and Bohm 1987), and futures studies (Lombardo 2006a, b; Ogilvy 2002) to name only a few disciplines and some representative thinkers and reviews of the field. It is common in these works to find few if any references to creativity research conducted in other disciplines.

This proliferation of discourses, research agendas, methodological perspectives, theoretical frameworks, and disciplinary foci is both fascinating and overwhelming. Faced with the pluralities of approaches, terminologies, ways of defining and framing creativity, and an ever-expanding research literature in sometimes quite unexpected quarters, it is no surprise that researchers have generally attempted to eliminate this complexity by simply not addressing every discourse of creativity. They have done this by making their definition of creativity limited to the aspects they wish to address, and excluding dimensions they consider epiphenomenal. With few exceptions, this has meant excluding research from other disciplines, even if directly related.

This process of elimination reflects the larger *paradigm of simplification* of academic inquiry (Morin 2008a). Traditional ways of organizing knowledge and engaging in inquiry have been based on analytic, reductive approaches stressing the importance of simplification. These approaches have become institutionalized in the disciplinary organization of universities. There is a parallel between the organization of *thinking* (analysis, disjunction, reduction,

and simplification) and the organization of *institutions* of learning along disciplinary lines. This organization reflects a process of ever-greater simplification, specialization, differentiation, separation, and the isolation (disjunction) of disciplines, subdisciplines, researchers, and their research projects (Morin 2008c; Zerubavel 1995). In the case of creativity, the overarching paradigm of simplification has meant taking a "huge and amorphous" (p. 33) topic of study (Gardner 1993), and breaking it down into simpler parts that can be studied and defined (Morin 2007, 2008b; Pietrobon et al. 2010).

The paradigm of simplification has its roots and first major expression in the work of Descartes (Descartes 1954), who summarized it this way:

> If we are to understand a problem perfectly, we must free it from any superfluous conceptions, reduce it to the simplest terms, and by process of enumeration, split it up into the smallest possible parts. (p. 179)

The traditional scientific method and the process of analysis focus on simplicity. Social scientists, seeing the success of physics, applied this approach to their own disciplines, inheriting the principles of *reduction* and *disjunction* (Morin 2014).In his critique of reductionism, physicist Albert-Laszlo Barabasi (p. 6) wrote that:

> Reductionism was the driving force behind much of the twentieth century's scientific research. To comprehend nature, it tells us, we must first decipher its components. The assumption is that once we understand the parts, it will be easy to grasp the whole. Divide and conquer; the devil is in the details. Therefore for decades we have been forced to see the world through its constituents. We have been trained to study atoms and superstrings to understand the universe; molecules to comprehend life; individual genes to understand complex human behavior; prophets to see the origins of fads and religions. (…) Now we are as close to knowing everything there know about the pieces. But we are as far as we have ever been to understanding nature as a whole. (Barabasi 2003)

Morin shares the critique of the limitations of reductionism (Morin 2014):

> Traditional reductionism claims that we are all individuals, in society and in ecosystems. In this perspective, we are merely units inside these systems, and we are not the connections. In contrast complexity tries to understand the type of connections that are present. (p. 17)

Context and (transdisciplinary) connections have historically not been studied because of the principle of disjunction—*either* A *or* B, but not the *relationship*

between A *and* B. In the process of disciplinary differentiation that occurs with specialization, this has led to separation and lack of communication (Hennessey 2015).

Reductionism focuses exclusively on the parts. Holism only sees the whole, disregarding the parts. In creativity research, we see this in the ongoing debate between "the lone genius and the zeitgeist," between psychologists and sociologists, atomists and holists (Glăveanu 2014b; Montuori and Purser 1995, 1996, 1999; Simonton 1999).

As the planet becomes more and more interconnected and interdependent—*Linked*, or *Connected*, to mention but two popular scientific works on the topic (Barabasi 2003; Christakis and Fowler 2009)—there is a greater awareness of the importance of connectedness and the limitations of the reductionist approach. There is a need to develop new forms of scholarship and practice (Montuori and Donnelly 2013a; Morin 2008c; Taylor 2003), as well as new ways of accounting for creativity and the larger, more contextual process of innovation. Good ideas are not enough in industry or social innovation: they need to be applied. This leads to a broader view of the creative process that typically spans several disciplinary domains and highlights the limitations of an approach limited to one discipline.

Complexity science is an umbrella term for an approach that engages knowledge across disciplines. It incorporates a number of developments in twentieth-century science, primarily Information Theory, Cybernetics, General System Theory (GST), and Dynamical Systems (or Chaos) Theory (Morin 2008a; Peat 2002). Complexity theory has focused on the study of complex adaptive systems (CAS), characterized by self-organization, emergence, interdependence, interconnectedness, and uncertainty. These are system features that cannot be explained by simplification in a strictly reductionist way precisely because it eliminates interconnectedness, interdependence, and in Morin's epistemological approach, the role of the inquirer. The phenomena of self-organization and emergence, central to CAS, refer to the processes through which higher-level order emerges bottom-up from the interactions of agents, rather than top-down. These processes have been studied in such diverse subjects as ant colonies, brains, and social movements (Borgo 2006; Montuori 2003). They are of considerable significance to creativity research in an age of networks and distributed, collaborative creativity.

Drawing on one of its precursors, Bertalanffy's GST (Von Bertalanffy 1976), complexity theory focuses on viewing living systems as open systems interacting with the world rather than atomistically, as closed systems. The open system's interactions with the environment make it less stable and engaged in an ongoing process of change, alternating periods of equilibrium and

disequilibrium unlike closed systems, which show no variation. Bertalanffy was critical of the way traditional scientific inquiry studied all systems as if they were closed, a heritage from the atomistic approach of the Newtonian/ Cartesian worldview (Capra 1996). Because the open systems view requires an understanding of system and environment, as well as the multiple relationships, Bertalanffy envisioned GST as a *transdisciplinary* project, a way to foster communication and integration *across* disciplines and subdisciplines. This would be achieved through the use of "general" systems concepts and the articulation of isomorphisms or similarities in form. Today these might be referred to as self-similar or fractal dimensions (Capra 1996; Morin 2008b; Von Bertalanffy 1976). The concept of feedback, borrowed from cybernetics, was introduced to address a dimension of process, and going beyond linear causality to *mutual* causality, or how systems mutually influence each other through interactions (Maruyama 1963). Complexity highlights the importance of mutually constructive processes. Individuals create society that creates individuals. Individuals are in society, which in turn is in individuals (Morin 2008b). Starting with this assumption, it goes beyond either/or approaches that privilege *either* self *or* society, to study the always changing and contextual interactions and constructions of *some* individuals and society (Ogilvy 1977).

Drawing explicitly from systems, complexity, and gestalt approaches, Barron (1995) developed the idea of an ecology of creativity, which he first articulated in an article entitled *Towards an Ecology of Consciousness* (Barron 1972). The ecological approach viewed creativity in the largest possible context. Barron argued, for instance that "psychogenesis is best understood in the context of cosmogenesis" (p. 30). Barron's highly original vision wass grounded in the psychology of creativity but it also situates this research in a larger evolutionary and philosophical context which requires a transdisciplinary approach.

For Barron, the context of creativity was vast (Barron 1969):

> (T)he problem of psychic creation is a special case of the problem of novelty in all of nature. By what process do new forms come into being? The specification of the conditions under which novelty appears in human psychical functioning is the task to which the psychology of creativity addresses itself. In doing so, it links itself to the general scientific enterprise of describing the evolution of forms in the natural world. (p. 9)

His approach focused on the phenomenon of emergence, viewing creativity as the result of a conjunction of social and psychological processes. Barron drew

on the social and the natural sciences, studying interactions and processes identifying significant self-similarity or fractal characteristics in systems at all levels (Barron 1979, 1995).

For Barron, the systems approach did not involve the primacy of the social or an attribution theory, although it should be noted that the eminent creatives he studied at IPAR were selected as creative by their peers, who were clearly the "gatekeepers" in this context. Barron's approach did not involve reducing creativity to *either* the individual *or* the social, but rather understanding how creativity emerged as a result of the *conjunction* of different factors. In his view, creativity is a universal phenomenon with fractal features across systems, from genes to individuals to entire ecologies, and the ecology of creativity studies how these dimensions interact in the process of emergence. His ecological vision resonates with the integrative vision of scholars in a broad range of disciplines, and specifically the natural sciences, who see the universe and nature as larger creative processes (Bergson 1975; Davies 1989; Kauffman 1995; Kaufman 2004; Pope 2005).

Barron's work can be read as a study of the human characteristics of creative systems, and the complex characteristics of human creativity at a variety of levels that include the individual and the sociopolitical (Montuori 1992, 1996; Montuori et al. 2003). Barron's approach was a precursor to transdisciplinarity. He sought to bring together the various systems within systems that make up the ecology of creativity, connecting the different fields of study to gain a better understanding of the different aspects of the ecology.

Several threads running through Barron's work show significant parallels to themes in complexity theory, most notably in his studies on the relationship between complexity and simplicity as personality dimensions (Barron 1953a), on the need order and disorder as motives for creativity (Barron 1963), and the articulation of ego-strength as flexibility and adaptability for self-re-creation (Barron 1953b). His critique of homeostatic models of human functioning and his stress on the potentially generative role of disequilibrium and disorder mediated by his concept of ego-strength (Barron 1968), preceded the work on far-from-equilibrium systems in Chaos Theory (Montuori et al. 2003). The concept of antifragile systems (Taleb 2012), which thrive on disorder, is given a human face by Barron's psychological articulation. Barron argued for the continuing dialectic between order and disorder, complexity and simplicity in creative systems. He viewed creativity, the creative person, and the creative process as paradoxical phenomena, in the sense that they contain seemingly opposite characteristics that go against established belief. Significantly, Casti's key text on complexity is subtitled "explaining a paradoxical world through the science of surprise" (Casti 1994) precisely because of the paradoxical and

seemingly self-contradictory nature of complex systems. The essential tension between order and disorder and equilibrium and disequilibrium in individuals (and more broadly in creative systems) meant that creativity emerges *on the edge of chaos*, which is also suggestive in terms of the vexing relationship between "creativity and madness."

In his discussion of complexity theory, Kauffman (Kauffman 1995) echoes Barron's psychological findings regarding order and disorder and generalizes them to all complex systems, writing that "Networks near the edge of chaos— the compromise between order and surprise—appear best able to coordinate complex activities, and best able to evolve as well" (p. 26). Seeming to take a leaf out of the creativity research playbook, Kauffman argued that complex systems "have learned to balance divergence and convergence, so that they're poised between chaos and order" (p. 335).

Barron's transdisciplinary work provides important pointers for connecting creativity research to the larger study of creativity in nature, as well as society, through the lens of complexity. It points to the intimate connection between the phenomena of complexity and creativity, and the way creativity research can inform the application of complexity theory to human beings. An exploration of the traits of creative individuals offers significant pointers for the cultivation of creative social settings. Creative social systems promote independence of judgment, tolerance of ambiguity, preference for complexity, and androgyny foster creativity. Authoritarian social systems promote (or more likely enforce) conformity, intolerance of ambiguity, and polarized, stereotypical gender roles (Montuori 2005b). There is weaving and re-weaving to be done with existing creativity research and other research approaches and findings, and their application at a variety of levels an in a range of contexts.

After a brief overview of complexity and creativity, we now turn to transdisciplinarity, which raises important possibilities for the study of creativity across disciplines are levels of study.

Transdisciplinarity: Potentials and Possibilities

Transdisciplinarity has emerged over the last few decades as an attempt to address disciplinary fragmentation. It presents an alternative to the paradigm of simplification, reduction, and disjunction, taking on the challenge of complexity and proposing to connect and contextualize knowledge. Transdisciplinarity does not reject disciplinary knowledge, methods, and agendas (Nicolescu 2008b). It argues instead for the importance of *also* bringing together knowledge that is often dispersed in highly specialized fields and

their journals. It seeks to address the fact that with this hyper-specialization, there are fewer attempts to address the larger questions facing humanity.

Transdisciplinary scholarship is already being developed across the globe and applied in undergraduate as well as doctoral studies (McGregor and Volckmann 2011; Montuori 2010). Not surprisingly, several different approaches have already been articulated (Augsburg 2014). Transdisciplinarity does not aim to produce totalizing "theories of everything," definitive theoretical frameworks that incorporate all and everything. Its goals are to propose generative frameworks that can integrate new perspectives and raise different questions. It also tackles problems that have historically not been addressed because they are blind spots in disciplinary discourse, living in between disciplinary perspectives, or are simply considered too large to be addressed by hyper-specialized researchers.

For our purposes, we will draw broadly on what we are calling Integrative Transdisciplinarity (Montuori 2014). Integrative Transdisciplinarity draws primarily on the work of epistemologists of complexity Edgar Morin, Mauro Ceruti, and Gregory Bateson (Bateson 2002; Ceruti 2015; Morin 2008a). It has emerged from a critique of the foundational principles of reduction and disjunction in the paradigm of simplification. While recognizing the successes of reductionism and simplification, the concern is addressing the "complex" or woven-together nature of the world, its networked, contextual, interconnected dimension that was previously not addressed. Transdisciplinarity involves an epistemological exploration of that which has been disconnected and decontextualized in the paradigm of simplification and integrating the diverse strands of inquiry that can be found within and across disciplines for purposes of both theoretical and practical engagement. Integrative Transdisciplinarity aims to develop scholars who engage in creative integration to tackle complex problems in ways that are not limited to one specific disciple.

Integrative Transdisciplinarity recognizes that the world is not organized along disciplinary lines. Fostering creativity in education, for instance, can draw extensively on research in the psychology of creativity. But the valuable findings in this discipline are of limited use if they are not also contextualized in the broader realities of bureaucratic institutions, teacher training, educational goals, and the many ways in which creativity has historically not been valued and indeed actively suppressed in educational institutions (Montuori and Donnelly 2013a; Robinson 2001).

Transdisciplinarity is *inquiry-driven*: it focuses on specific issues and then draws on pertinent knowledge across disciplines as a way to address the complexity of lived experience and the challenges of creating change in systems (Montuori 2005a). Historically scholars have often not been aware of the

complexities of practice and application. Conversely, practitioners have often not been informed by, or been able to assess, the vast realm of rich theoretical and empirical research. Transdisciplinarity seeks to span the historical split between theory and practice. It aims to foster the development of scholar-practitioners who both understand the complexities of the systems they study and the actual practices of creating change. Transdisciplinary scholars engage with ideas that are often only hinted at in disciplinary discourse. Their role is almost inevitably a collaborative one, engaging in dialogue with different perspectives and scholars from different disciplines.

Two key transdisciplinary questions emerge in light of the current creativity of culture and the culture of creativity research. The first explores the creativity of creativity research.

> *How is knowledge about creativity constructed? What are the historical, disciplinary, and cultural matrices that inform our understanding of creativity in the plurality of different disciplinary and subdisciplinary discourses and research programs, and by the researchers themselves?*

The *construction* and *connection* of knowledge, both intradisciplinary and transdisciplinary, are vital issues in academia today (Ceruti 2015; Taylor 2009). Morin's complexity lies at the root of transdisciplinarity as we present it here. It is rather an epistemology of complexity or *general* complexity (Morin 2007), focusing not only on *what* we know but *how* we know, and how we create knowledge. In this sense, it is different from the mostly quantitative approach to complexity of the Santa Fe Institute, which Morin refers to as *restricted* complexity. The epistemology of complexity addresses *observing* systems as well as *observed* systems (Von Foerster 1983), the kind of complexity we find in the process of the observer/inquirer's observation and construction of knowledge. This involves a reflection on the process through which researchers construct their topic and moves the discussion to the meta-level, from observed systems (the definition of creativity) to observing systems (the moves and distinctions of researchers as they articulate their topic, and the criteria for doing so).

This reflexive process leads to such questions as how individual researchers and various theoretical perspectives *construct* their understanding of their subject. *It means casting a light on the creative process of the researchers themselves and how they create their understanding of their subject*, through their own idiosyncratic theoretical, methodological, and thematic choices and decisions, including what Holton calls the researcher's *themata* or recurring ideas (Holton 1988). It means exploring their underlying philosophical assumptions, as well assessing their preference for complexity or simplicity.

It also means studying the *cultures of research*: how disciplines construct their subjects historically, how they create order and what they consider disorder, and how disciplines interact and compete with each other and deal with new theoretical developments and empirical findings. Casting the net wider, transdisciplinarity invites us to trace the historical trajectory of the psychology of creativity in the USA, originating as it does in the study of genius, with all its implications, and the way these origins are informed by social-historical factors like individualism, Romanticism, and the dominance of the "great man" theory (Montuori and Purser 1999; Pope 2005).

As an example of the disciplinary construction of creativity, and the articulation of what is and is not epiphenomenal, Weisberg has proposed a new definition of creativity that focuses only on originality, eliminating the second part of the standard definition of creativity (original *and valuable*) (Weisberg 2015). Weisberg writes that "for psychologist to regain control over the study of creativity" (p. 119), the way to address the challenge of sociocultural approaches and sociological labeling theory (creativity is who and/or what people say is creative) is to construct a new "parsimonious" approach to creativity research that focuses exclusively on novelty. Runco (2015) agrees and believes this involves focusing on what is *necessary* for creativity, rather than what is *unnecessary*, or "mere influences" (epiphenomenal). These unnecessary "mere influences," he states, include personality, attitude, culture, development, and motivation. The theory of *parsimonious creativity* focuses on an actual mechanism and extricates correlates (i.e., mere influences and possible, but not guaranteed results). Also, it is nicely scientific in its emphasis on *parsimony*. This is in direct contrast to a social definition—and any definition that includes unnecessary influences or unnecessary effects (pp. 25–26).

This definition of creativity is a proposal *within* the specific discipline of the psychology of creativity. It is an attempt to differentiate the discipline and create order, through a quite radical process of elimination, from the encroachment of more sociological approaches, which represent disorder. The proposal raises a host of issues, starting, of course, with the definition of creativity as originality, how one can establish what is epiphenomenal, what is meant by "guaranteed results," and perhaps most relevant to our discussion, whether the articulation, proposal, and acceptance or rejection of a definition is itself a "social" process. A transdisciplinary approach does not reject Weisberg and Runco's choice of a parsimonious definition. It takes a diametrically opposite view that includes what they have explicitly left out. Indeed, the specialized focus Weisberg and Runco propose provides a good reason for the *complementary*, transdisciplinary approach that looks at creativity in a relational, systemic, and contextual approach.

Because transdisciplinarity is inquiry-based, it draws on the experience of persons (often practitioners) seeking answers for emerging questions. As a result, it often focuses on areas that have not received sufficient attention. The main paradigms used by researchers may not account for specific phenomena that are nevertheless experienced by laypeople (Montuori and Fahim 2004). It was Montuori's experience as a professional musician and his realization that the relational aspects were not addressed in the research that led him to study the social dimensions of creativity (Montuori and Purser 1995). Creativity in the performing arts, such as musical groups, has received far less attention than creative individuals such as writers and composers (working in *relative* isolation) because of the individual-focused disciplinary paradigms historically used in the study of creativity, as has the topic of creative social settings. The experience of the Millennial generation, with their complex interweaving of I-We paradigms, warrants multidimensional approaches that take into account their social, cultural, and economic context. An understanding of the process of innovation requires a "wide angle lens" that addresses everything from the individual to the economic environment, with specific emphasis on the historically overlooked process of group creativity. Transdisciplinary researchers therefore immerse themselves in the social world, exploring new phenomena and manifestations of creativity, rather than privileging the laboratory. In Nicolescu's terms, this is the study of creativity in vivo as well as in vitro (Nicolescu 2008a).

> * *How can the work being done in often non-communicating disciplines and subdisciplines be connected and integrated to enrich the discourse and develop a more complex picture of creativity? How can the connections shed light on phenomena that have historically received less attention by the dominant discourse, and ones that have been extensively researched but mostly from within one discipline, or in a plurality of non-communicating disciplines?*

The study of gender and women is a significant example of fertile ground for transdisciplinary research on the relationship between creativity and culture (Dolling and Hark 2000), and is worth mentioning here. It raises important questions about identity, about what is and is not considered epiphenomenal, and what should and should not be considered necessary and unnecessary to understand creativity (Battersby 1989; Citron 1993). Helson (1990) wrote that:

> We think the understanding of creativity in women requires attention to the social world, to individual differences in motivation and early object relations, and to changes in society and the individual over time. In fact, we believe that the study of creativity in general needs all of these directions of attention. (p. 57)

This proposal clearly involves a more complex perspective on creativity, one that cannot be addressed by a single discipline it needs to take into account the interactions between individuals and social systems, the way society shapes us and sometimes determines what is and is not possible for us, and generally address multiple dimensions. It argues that the creativity of women (and the historical absence of women from lists of eminent creatives until recently) cannot be fully understood without reference to the social world, to changes in society and the individual over time. Over the years, essentialist approaches have all too often dismissed women as less creative, and "authoritatively" stated so, while not taking into account such very basic issues as the fact that women were simply not allowed to participate in domains where creativity was recognized (Eisler and Montuori 2007).

The social world cannot be dismissed as unnecessary influences with unnecessary effects for those who were not allowed to participate in domains where creativity was recognized. Are these issues epiphenomenal to the study of women's creativity? Or is it perhaps that the psychology of creativity should focus, as Runco and Weisberg propose, on specific novelty generation mechanisms and leave the social factors that inhibit creativity or lead it to express itself in non-eminent, everyday, ways to other disciplines and approaches, leaving the integrative, contextual work to transdisciplinarians? Transdisciplinary research complements disciplinary approaches by looking at the varied and complex social, political, cultural, and historical contexts as well as psychological factors that have played a role in shaping not only the creativity of women, but also how we understand the larger phenomenon of creativity given the omission of the social experience of women (Montuori and Purser 1995, 1996). Assuming that women, as feminist scholars have argued, have historically not had access to the domains in which creativity is recognized and still face uphill battles in areas like engineering, an argument has been made that it is not the case that women have simply not been creative during all this time but that the creativity of women has expressed itself in other aspects of life, areas that until recently have not received scholarly attention. Glăveanu's work on the craft of egg decoration is an example of how research can benefit by exploring different cultural contexts, practices that are not generally viewed as being in the domain where creative activity is engaged, in order to offer us new perspectives on the creative process (Glăveanu 2014a). Interestingly, the exploration of actual practices of women points to a more contextual creativity that is concerned with creating environments that foster creativity (Eisler and Montuori 2007).

The new cultural developments outlined at the beginning of this article are arguably leading us to a different, networked society, where the traditional categories of

modernity that have shaped the popular understanding of creativity begin to fail. We see this in the rise of participatory culture, where the top-down, artist-audience paradigm replaced by more interactive approaches. We see it in the emergence of a new categories such as "pro-am," amateurs who work at professional standards (Leadbeater and Miller 2004), and "prosumers," consumers who are also producers of media (Toffler 1980). The so-called democratization of creativity, from the lone genius to "everyone, everywhere, everyday" creativity, has enormous social implications, by no means all positive, according to critics. Perhaps most significant is the destabilization of the traditional categories of individualism and collectivism, and male and female (Hymowitz 2011; Montuori and Conti 1993; Ogilvy 1992; Rosin 2012). Creativity is now viewed as highly desirable in many industries. It is a central aspect of a high quality of life for a certain percentage of the population: Brooks coined the term "Bobos" to describe a new privileged class he refers to as bourgeois bohemians (Brooks 2001). The sociological phenomenon of "self-creation" or "reinvention," where one's life is viewed as a creative process and indeed a work of art (Bauman 2008; Elliott 2013; McCracken 2008), offers extremely fertile ground for research, at the intersection of creativity, culture, and identity. How is the term creativity used in these contexts? How is it being popularly defined? When asked about creativity, members of the baby boomer generation always named lone genius "eminent creatives." The millennial generation more often than not refers to friends, acquaintances, and collaborative projects. What are the implications of this change, and many of the other changes we are seeing in the discourse and practices of creativity?

We believe the phenomenon of creativity in today's society should not be researched exclusively in a disciplinary perspective, whether sociology, business, or psychology. The specialized disciplinary agenda of Weisberg and Runco sidesteps these cultural developments. Along with the specialized disciplinary research, integrative, transdisciplinary work is needed to study the way creativity is being explored, articulated, experienced, and expressed in new social contexts. The cultural complexity of our "postnormal" times requires integrative transdisciplinary scholars who draw on pertinent knowledge from a plurality of relevant disciplines to provide a rich picture of these emerging phenomena.

Conclusion

Creativity has become a vital and much-discussed topic in the postnormal world. The historical focus on individual creativity is being complemented by a new interest in collaborative creativity, in business, culture, and academia.

New questions are arising about such topics as creativity in relationships and groups, and creative networks. New approaches and definitions are being articulated, sometimes conflicting and contradictory. The new popularity of creativity also raises questions about the possible trivialization and instrumentalization of creativity and the way creativity is channeled (Keen 2008). These broader questions and the challenges of postnormal times escape disciplinary boundaries and require the development of new kinds of scholar-practitioners schooled in the practice of integrative transdisciplinarity.

Disciplinary research has unquestionably generated invaluable research, but it is limited by disciplinary processes that stress differentiation and specialization. Integrative Transdisciplinarity offers ways to integrate research from multiple disciplines and also to find ways of bringing it to bear on the pressing problems of social change and human betterment. The integration and application of disciplinary research require scholars who are skilled at bringing together this largely fragmented knowledge, in specific contexts, while also questioning the larger theoretical frames from which disciplinary knowledge emerges. Their specialization is not disciplinary but focused on specific issues, contexts, and practices.

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