

Creativity: The Goose That Laid the Golden Egg?

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“A man and his wife had the good fortune to possess a goose which laid a golden egg every day. Lucky though they were, they soon began to think they were not getting rich fast enough, and, imagining the bird must be made of gold inside, they decided to kill it. Then they thought, they could obtain the whole store of precious metal at once; however, upon cutting the goose open, they found its innards to be like that of any other goose.” (Wikipedia)

Introduction

The information society has come and gone, or so say a growing number of business pundits (Florida, 2002; Pink 2005). What will follow, according to their predictions, is an age of creativity, in which conceptual faculties will trump conventional intelligence, as measured, for example, by IQ tests. Some observers have gone so far as to propose that creativity will one day become the driving force of the American economy, as well as the primary means of promoting our country’s competitive advantage (Pink, 2005; Murphy, 2009). Others have argued that the growth of the creative sector of the global economy will transform society as we know it, giving rise to a new social class that crosses national boundaries (Florida, 2002).

It should come as no surprise, therefore, that individuals, businesses, and governments alike are all trying to position themselves to exploit this new environment. One need only consider the wide array of books now available that provide guidance on how to foster creativity. For example, individuals seeking to enhance their creative skills can consult any number of guides including Michael Mihalko’s *The Secrets of Creative Genius* (2001); John Daido Looi’s *The Zen of Creativity: Cultivating Your Artistic Life* (2004); as well as Hugh MacLeod’s *Ignore Everybody: and 39 Other Keys to Creativity*

* This paper is dedicated to my students in my class on Networks and the Creative Process, where the question first came up.

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(2009). Firms, too, are advised to follow suit, and develop their creative assets so as to remain competitive. For advice, they can consult: John Hawkins', *The Creative Economy: How People Make Money From Ideas*; Jeff DeGraff and Katherine A. Lawrence's, *Creativity at Work* (2002); and Tom Kelly et al, *The Art of Innovation: Lessons in Creativity from IDEO, America's Leading Design Firm* (2001), to name a few. Even the Federal Government has taken up the cause of creativity, having recently established National Science Foundation programs to provide support for it (http://www.ehow.com/list_6329969_nsf-grants-creativity.html).

Even as individuals and businesses are fine-tuning their creative skills in accordance with pundits' prescriptions, scholars from diverse disciplines are discovering that creativity is far more complex than had previously been assumed (Csiszentymihalyi, 1996; Amabile, 1996; Stacy, 1996; Sternberg, 1999; Weiner 2000; Sawyer, 2006; Sternberg et al, 2006). Of special interest, for the purposes of this paper, is the notion that creativity is not simply a property—that is to say, a quality or set of attributes—but rather a co-evolving, interactive, systemic process, in which the criteria for creative success and the attributes of the creator fluctuate in accordance with time and place. Thus, for example, whereas fine artists in the past tended to be introspective and reclusive while tending to their internal muses, in today's highly competitive environment successful artists are typically extroverts, as skilled in marketing their works, as they are in creating them (Sawyer, 2006).

To appreciate how these systemic changes might take place, one need only look to the period of the Enlightenment. Before this time, the Church defined what constituted creativity. Hence, it was, in part, the secularism associated with the Enlightenment that fully freed creators from the bonds of the Church's prescriptions, allowing them to become artists and inventors in their own rights, earning reputations and selling their creations in the marketplace (Weiner, 2000). This favorable attitude towards creativity and innovation was nowhere more pronounced than in the early years of the United States, where creativity and invention were not only deemed critical to a nation short on man-power, but were also imbued with mystical overtones (Smith, Merrit Roe, and Leo Marx, ed., 1998; Hughes, 2005). It was for this reason that the Founding Fathers stipulated in the Constitution that Congress was authorized to protect intellectual property rights.

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Taking a systemic perspective, I ask how today's shift to a highly competitive creativity-based economy might affect the creative process in the future. In particular, I pose the question: who will be the creators; which attributes will be important for success; how will the system be supported and governed, with what results for creative outcomes?

Looking ahead, I foresee a paradox. In particular, I suggest that with the advent of a user-centric digital culture, the free market mechanisms that previously fostered innovation and creativity will now serve to constrain them. I argue that, just as in the years prior to the Enlightenment, the Church locked creative actors into a traditional schema, so too in the future many creative actors will find themselves 'locked in' to a commercial schema by market demand. In both these cases, creators are constrained from operating 'outside the box'—that is to say, from creating. Summarizing our argument, one might say that *THE FORCES OF THE MARKET MAY KILL THE GOOSE THAT HAS LAID THE GOLDEN EGG!*

To explore this possibility, the paper proceeds as follows. First, it describes how scholars have typically characterized and operationalized the term creativity, arguing that such universal definitions are inappropriate because the notion of what constitutes creativity has varied over time and place. Next, to overcome this problem, the paper puts creativity in context by conceptualizing it as part of an evolving systemic process, in which the notion of creativity is linked to larger changing societal factors. Employing this framework, the paper examines the creative process from an historical perspective, illustrating how the system and its components change in a co-evolutionary fashion. Next, building on this analysis, the paper identifies the contextual factors that will likely affect the creative process today, giving special emphasis to the changing shape of the creativity landscape architecture in today's global economy. Having identified the critical levers that affect the creative environment, as well as the creator's role in it, the paper concludes with a discussion of the policy implications derived from the findings.

Defining Creativity

Defining creativity is—as Paul Weiner has pointed out—something of a creative act in and of

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itself. For, notwithstanding the myriad innovations that have accompanied the evolution of humankind, it was only in 1870 that the word *creative* was actually put to use (Weiner, 2000, 1). Likewise, the impetus to view creativity as an important societal goal only emerged in the post war period, as the US Government began to emphasize innovation as a means of gaining superiority over the Soviet Union (Sawyer, 2006). Emphasizing the psychological benefits of creativity, J. P. Guilford, President of the American Psychological Association, sounded the call to action in 1950, when he appealed to his fellow psychologists to develop a major research agenda centered around the study of creativity (Weiner, 2000, 5).

Researchers were quick to take up the challenge. According to Barron and Harrington, for example, between 1950 and 1980, the number of works focusing on creativity increased from approximately one hundred eighty-six to seven thousand, and then doubled over the next twenty years (Barron and Harrington, 1981, as cited in Weiner, 2000, 7).

The growing interest in creativity did not, however, resolve the definitional and boundary problems associated with the field. To the contrary! With researchers addressing the subject from a wide range of disciplinary perspectives, definitions of creativity ranged across the board, focusing on widely diverse aspects of the creative phenomenon (Sawyer, 2006). Thus, for example, cognitive scientists honed in on intelligence and problem solving abilities. They associated creativity with attributes such as divergent thinking and associational processes. Educators were interested in the ways that developmental processes, such as family influences and peer status, affect creativity. In turn, biologists and neurologists analyzed how brain structure and brain altering substances influence creativity, while psychologists attended to motivation and emotional factors—such as ego strength, and the willingness to deal with ambiguity and take risks (Eyseneck, 1992; Camino J. Cela-Conde, et. al. 2006; Heilman, 2005). Others bypassed the individual entirely, looking at outputs as a measure of creativity (Amabile, T., 1996; Runco, 2007).

Without a common definition, it was difficult to study creativity in any empirical, scientific fashion. As Sawyer has pointed out:

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By the 1970s, the failure [of researchers] to successfully define creativity had convinced many psychologists that creativity was not a distinct personality trait or mental process. Instead, psychologists began to believe that creativity was just a word we used for products that were generated using common, everyday mental mechanisms that everyone possessed (Sawyer, 2006, p, 36).

Over time, a common, working definition of creativity began to emerge. Today, creativity is generally described as: “the ability to produce work that is novel (i.e. original, unexpected), high in quality, and appropriate (i.e. useful, meets task constraints)” (Sternberg, Kaufman & Pretz, 2002, p. 1). This definition is not without its critics, however. For example, Mark Runco—believing that everyone is capable of creativity—contends that creativity is “manifested in the intentions and motivations to transform the objective world into original interpretations, coupled with the ability to decide when this is useful and when it is not” (Runco 2004, pp. 22-23). Accordingly, and in line with the perspective of symbolic interaction, individual understanding, on its own, constitutes a form of creativity. Hence, creativity, as Runco characterizes it, is not a special or unique quality. Rather, everyone has the *potential* to be creative (Runco 2004: pp. 22-23).

But not everyone is equally capable of turning creative potential into reality. To produce creative products requires mastering the creative process—that is to say, the space between creative people and the products that they produce (Kauffman and Baer, 2005). Most scholars would agree that at least four stages are entailed: preparation, incubation, insight, and verification (Sawyer, 2006, 9. 59).

In the first phase, creators must apply themselves intensely so as to gain the knowledge and skills associated with working in a particular field or domain. Such knowledge is required in order for creators not only to meet the standards of the field, but also to identify anomalies and problems that need to be worked out so as to move the domain forward. Because this stage is so demanding, requiring approximately ten years of hard work, creators must be extremely energetic, and highly dedicated and committed to their pursuits (Sawyer, 2006).

What follows is a reasonably long period of incubation. At this point, the creator mulls over the problem in his mind, brings multiple ideas and associations to bear, tries them on for size, and

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combines and recombines them in a variety of different ways. Both his unconscious and conscious minds are involved, as are external signals and cues from diverse sources. Serendipity, and being in the right place at the right time, are also important (Austin, 2003; Simonton 2004). To negotiate this process successfully, the creator must be open to new ideas, adept at making associations, and capable of both divergent and convergent thinking (Sawyer, 2006)

Next comes the “aha” moment—the moment of insight, when the pieces of the puzzle converge in an emergent fashion, and problems and solutions are reconceived. This moment gives rise to what Csikszentmihalyi has characterized as *flow*, a peak experience associated with joy and meaningfulness, linking creators to a larger world, outside themselves. While being creative is extremely hard, *flow* experience provides the intrinsic rewards that constitute the major incentive to create. Interestingly enough, scholars have found that monetary rewards are far less important than intrinsic benefits (Amabile, 1996). As Csikszentmihalyi describes:

Yet when the person is working in the area of his or her expertise, the worries and cares fall away, replaced by a sense of bliss. Perhaps the most important quality, the one that is most consistently present in all creative individuals, is the ability to enjoy the process of creation for its own sake (Csikszentmihalyi, 1996, p, 75).

In the final stage of the creative process—verification—creators must pass muster within the field of which they are a part. Their work must be acclaimed by authorized others in order to be deemed creative (Csikszentmihalyi, 1996). The criteria by which creative works are evaluated will vary according to the domain, as will the types of skills creators must have to gain acceptance for their works (Sternberg et. al, 2004). Nonetheless, given the need to rise to the challenge, all creators must have strong egos that can risk rejection, independent judgment, as well as a strong passion about, and belief in, their creative contributions (Sawyer, 2006)

Given the multivariate nature of the creative process, some scholars have begun to move beyond an intra-psychic analysis of creativity to develop a more socio-cultural perspective that incorporates both the individual creator and the environment in which he operates. Taking a systems perspective, analysts can look not only at the interrelationships among the stages in the creative process, and the variables that affect it, but also at how these relationships and factors have changed

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over time and in different contexts (Amabile, 1996; Csiskzentmihalyi 1996; Weiner, 2000; Sawyer, 2006) Such a systemic approach is extremely useful. By focusing on all the critical variables, both individually and as a whole, one can shed light on the nonlinearity and complexity associated with the creative process (Stacy 1999). Secondly, by allowing analysts to compare variables over time, such an approach provides a better sense of the evolutionary nature of the process, and hence a stronger basis for assessing its future. Finally, because scholars can identify critical points/relationships in the process, they can better identify means of leverage in the socio-cultural environment that can serve as a basis for making sound policy prescriptions.

Creativity Viewed From a Systemic Perspective

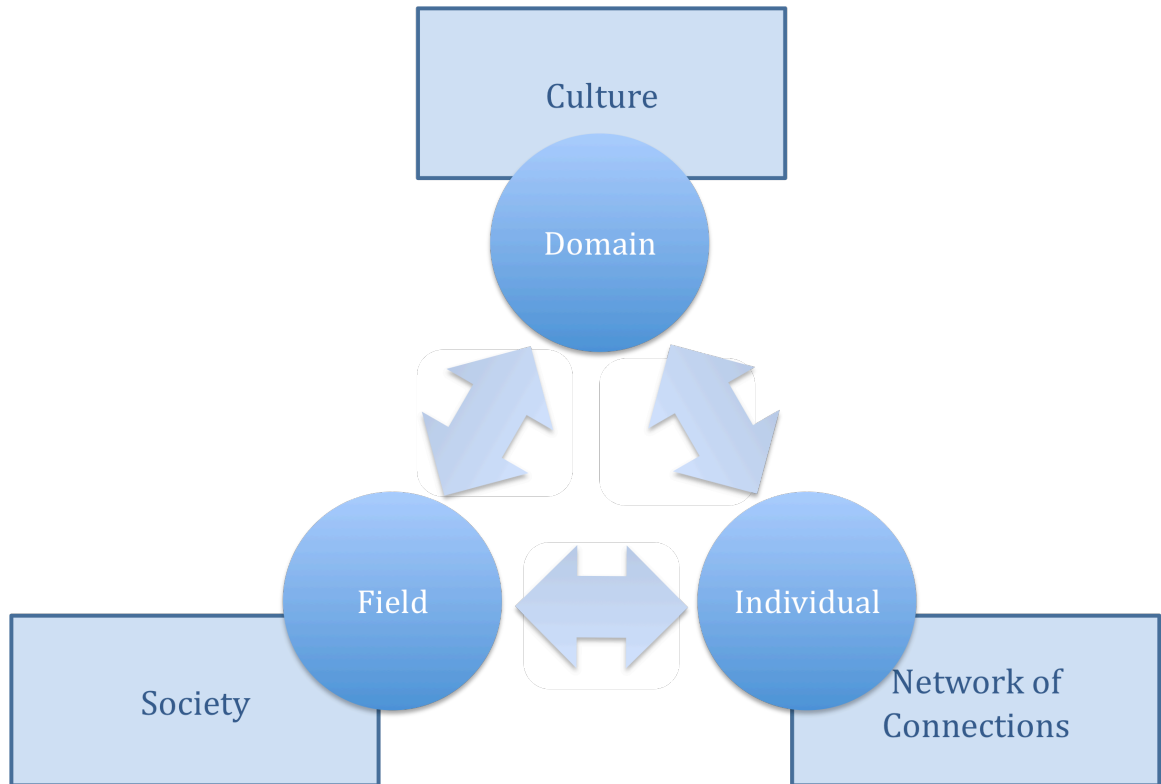
Although a number of researchers have long been aware of the role the environment plays with respect to creativity (Gruber, H. 1988; Harrington D. M. 1990; Simington, 1994) it is only recently, with the work of Mihaly Csiskzentmihalyi, that a systemic framework for analyzing the creator in context has been fully explicated (Csiskzentmihalyi 1999). This framework is laid out below.

As depicted in Figure 1, below, the universe of creativity is comprised of a cultural context, a social order, and individuals and their networks of associations and resources. Each of these has unique aspects, and plays different roles in the system; but all are interdependent and coevolving with one another. Together, they determine the fitness landscape of the creative environment (Kauffman, 1995).

According to Csiskzentmihalyi, the cultural realm is comprised of diverse but interconnected domains of knowledge, such as science, mathematics, art, music, etc. These domains, each housing a unique sphere of activities, are made up of a network of people who share common ideas, schemas, and practices, as well as learn from one another. Hence, domains tend to be self-reinforcing. However, domains are subject to changes over the long-term, which typically occur in a precipitous fashion (Stacy 1995), taking the form of a punctuated disequilibrium or phase transition. For although continuity within a domain is conserved as existing knowledge and related information is stored, maintained, and made available through 'memes,' innovation takes place to the extent that individuals

can use their resources to create new ideas, which—having been deemed worthy by the gatekeepers in the societal field—are then integrated into the domain. Likewise, the number and types of

Figure One : A System Perspective



Source, Csikszentmihalyi, 1999

domains, the amount of support they receive, and how they are prioritized, can change over time depending on activities within the social order as well as on those within the cultural realm. Moreover, depending on how domains are structured and governed, they may serve either to foster or hinder creativity. Knowledge might be stored, for example, so as to be accessible to many or a few. Similarly, the boundaries of the domain might be set to facilitate or deny widespread access to knowledge (Csikszentmihalyi, 1999).

As conceived in this model, the societal order consists of the socio-economic and political systems that affect the development of creative activities. Together, they not only provide an

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infrastructure that can serve either to support or hinder creative activities; they also generate a value system by which creative activities can be judged. In any particular time and place, these conditions, when taken together, generate an atmosphere, or *Zeitgeist*, that can lend support to, or hinder, individual creators as well as domain activities (Boring 1971; Runco, 2007). Thus, for example, the social order determines what resources are made available for creative activities, and how they are allocated among domains. In this way, incentive structures are created that attract individuals to one or another areas of creative activity.

Evaluations within a specific domain are the prerogative of the field—that is to say, the gatekeepers who are authorized to monitor a particular domain to determine which memes are both innovative and appropriate enough to be incorporated within it. Gatekeepers are typically those members of the social order who are most established and respected, as well as those who have the necessary power to assert their authority over the domain (Bourdieu, 1993). They might include, for example, patrons, experts and critics, and those who distribute creative works to the public (Sawyer, 2006:125). In governing the domain, gatekeepers can act to enhance their own positions and statuses in society or to enhance the creativity and largesse of the domain.

The individual is the potential creator. Whether or not creators are successful in their endeavors depends in part on their intra-psychic attributes (I.Q., personality traits, personal style, etc.). But, as depicted in the figure above, individuals do not act alone (Sawyer, 2006). They rely not only on the established knowledge and skills derived from the domain; as importantly they employ their social and cultural capital—that is to say, the networks of associations and the types and extent of the resources and opportunities available to them (Austin, 2003; Sawyer, 2006). No wonder, then, that creators benefit when they are engaged in overlapping projects and networks of enterprises (Gruber & Davis, 1998). On the other hand, when associations are too dense, and knowledge too prescriptive, creativity will be hindered (Runco, 2007). The extent to which individuals can access appropriate and diverse connections and resources will depend not only on their statuses and personal skills, but also on the nature and structure of the social order and the cultural realm. Serendipity will play a role (Austin, 2003; Simonton, 2004). If creators are successful in their

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endeavors, their innovations will be integrated into, and thereby alter, the larger social order and cultural realm. On the other hand, if the Zeitgeist changes, the type of individual who succeeds, and the resources he or she possesses, will change as well (Sawyer, 2006).

Tools play an important part in the evolution of the entire creative universe. For example, individual creators use tools to enhance their skills, to develop their social and cultural capital, as well as to distribute and promote their creative products. Tools are used in the social order to create and sustain an infrastructure that brings creators to the attention of the gatekeepers and the public, as well as link gatekeepers so they can agglomerate resources in support of creative activities. In the cultural domain, tools are used to store, manage, and link creative resources, as well as to make them accessible to others. As importantly, tools connect the various components of the creativity system, and therefore serve to distribute impacts throughout it.

Most significantly, tools are both a product of the system as well as a major source of change. They are catalysts that lead to episodic clusters of creative activities (Runco 2007; Perez, 2009). New tools and technologies, for example, can alter the skill requirements of the domain, making some skills obsolete and others more valuable. Likewise, depending on their design, capabilities, and configurations, tools can either facilitate or hinder access to domain knowledge, collaboration among creative actors and enterprises, as well as promotional activities designed to generate gatekeeper support.

Select Historical Snapshots

All of human history can be viewed as a creative process (Runco, 2007; Weiner, 2000). A systems model, such as that provided here, not only affords a means of organizing this history into a coherent narrative; it also brings into relief the critical intersections among the system components that might lead to co-evolutionary changes over time. Of course, it is far beyond the scope of this paper to undertake a major historical analysis. But, by posing a few historical snapshots, it is possible to highlight, in a more concrete way, the key factors that drive the universe of creativity. Because the prevailing scholarly definition of creativity is so closely associated with the perspective of the West

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(Weiner 2000), these historical examples will be drawn from within this context.

To create a baseline, it is useful to begin by looking at the world of creativity from the time of the Old Testament Hebrews. Starting from this point, we can demonstrate how, as cultural traditions became less entrenched, and societies became more secular, creativity was increasingly valued; creative systems grew more and more complex; and creative outcomes were far more diverse and greater in number. These developments culminated in the Enlightenment, a phase transition, which gave rise to an entirely reconfigured cultural universe.

As can be seen from the *Old Testament*, creativity during the early Hebrew period was considered to be the sole prerogative of God. As Weiner describes, because God had established the world *ex nihilo*, all subsequent creations were bi-products of God's handiwork. Moreover, given a sacred text that embodies the word of God, God was—at one and the same time—the font of all domain knowledge, as well as the gatekeeper that determined its acceptable use. Thus, for example, God forbade the creation of graven images that referenced the heavens above and the underworld below. Likewise, God commanded Noah to build the ark according to His detailed prescriptions (Weiner, 2000). Looking, then, through the lens of Csikszentmihayli's model, we can see that, in the Hebrew period, the three components of the creativity universe were merged, and functioned as one.

During the heyday of Hellenic civilization, the social environment was more hospitable to creativity, and creators were appreciated and recognized as such (Weiner, 2000). Nevertheless, much as in the Hebrew period, people believed the gods were the sole source of creative inspiration (Sawyer 2006). Thus, instead of imitating nature, artists were called on to reveal its sacred and transcendent qualities (Sawyer, 2006, 12). By the time of Aristotle, the Greeks began to support a range of creative activities, especially poetry, playwriting, and philosophy. As significantly, the system of creativity was beginning to become more differentiated, even as it maintained its hierarchical structure. For now it was philosophers, and in particular Aristotle, who acted as both keepers of the domain as well as gatekeepers in the field. In this capacity, they ranked domains and laid out procedures for how they should be organized (Weiner 2000). Individuals were likewise differentiated hierarchically according to their roles and status in the social order. Access to the high-ranking

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domains was limited to upper class males, while women and lower ranked artisans carried out more applied crafts (Weiner 2000). The domain knowledge of the Greeks—so highly sought after by the Romans and the Europeans in the years that followed—was stored not only in the writings and artifacts of the period, but also—and quite significantly—in the monumental Library in Alexandria, established by Alexander the Great.

In the Western medieval period that followed, the Church established attitudes about, as well as the organization of, creativity. Nonetheless the situation was somewhat paradoxical, leaving some room for change. On the one hand, the Christianity of the New Testament was a major innovative departure from the Hebrew tradition of the Old Testament. On the other hand, the Church, as it was ultimately established, was determined to keep the “new tradition” in tact (Weiner 2000). The Church believed that the creative arts could serve to preserve this tradition, but only if they were sponsored and controlled by the Church. Creativity, therefore, was a tricky business, and artists had a relative low status—on the order of butchers and other trades people. As described by Weiner:

... the purpose of artwork in the churches was to imitate and reveal the sacred and ideal realms. Mastery of the arts and inspiration were important, but novel interpretations and creative productions were not. Theological ‘knowledge’ was key, and deviance from the ‘truth’ –as defined by the Church—was heresy. (Weiner, 2000, p. 45)

While the Church established the standards for creative products, it was the creative domain itself that maintained and passed on domain knowledge. Because artworks were grander in scale, production processes had to be more highly organized. Hence, artists began their careers as apprentices working in a studio under the tutelage of a grand master. It was the grand master who earned the commissions, conceived the paintings and determined their style, organized the work, only contributing his own artistic talents to carry out the most difficult tasks (Sawyer, 2006).

During the end of the Medieval Period, the world of creativity began to diversify further, a change that culminated with the flowering of the Renaissance. Tell tale signs were already evident, for example, with the works of the painter Giotto, whose style left considerable room for interpretation. Thereafter, artists were called on not only to imitate nature; but also to portray it more clearly, based on their inner understandings (Weiner, 2000; Sawyer, 2006). Valued increasingly for

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their insights as well as their skills, the artist gained both praise and patronage. The development of the canvas provided another venue for independent artistic endeavors, allowing the artist to expand his vision into portrait painting, landscape, and scenes from daily life. As the artist's repertoire grew, so did his means of support, thereby loosening his bonds to the Church.

The rise of the city-states, which competed for artists and artworks, was especially noteworthy in this regard. For it is in the Italian city states that we first see the unfolding of the creative process as Csizsentmihayli's lays it out. Most noteworthy is the growing diversified support for creativity from within the social order, as cities began to compete to attract artists and innovators. The result was an increasingly independent class of creators working within a diversified network of cohorts; a much broader base of financial support; and the establishment of formal, institutionalized domains, which took the form of studios, schools, and academies, responsible for generating and preserving knowledge.

The city of Florence, the home of the Renaissance, is a prime example of these developments. Although the Di Medici clan ruled as 'republican' dictators, they were fierce patrons and proselytizers of the arts. As such, they served both as the promoters of creative domains as well as gatekeepers of artistic and innovative interactions and activities. Seeking to make Florence the artistic center of Europe, the Medici made resources widely available. For example, to promote domain knowledge, as well as share it widely, the Di Medici agglomerated all types of creative people within the city of Florence and established local academies and schools where artists could develop their talents, assemble their acquired knowledge, and pass it on to others. Moreover, in contrast to the heavy hand exerted by the Medieval Church over creativity, the Di Medici encouraged diversity and innovation on the part of artists, providing incentives for them to distinguish themselves and their works in their own right. To this end, for example, they conducted major competitions, such as that between Ghiberti and Brunelleschi, to take on important city projects, such as the construction of the doors of the Florentine Baptistry. As city-states sought to distinguish themselves with their innovations and artwork, creators likewise sought to differentiate themselves based on their individual styles. Creativity and creators prospered as a result (Weiner 2000; Sawyer, 2006).

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With the advent of the Enlightenment, the idea of creativity came into its own. In fact, it was the first time that the word was formally used (Weiner, 2000). No wonder! Tradition and ideology were being overturned, as change—to be executed through a reasoned process—became the watchword. As described by Peter Gay, historian of the Enlightenment:

In the century of the Enlightenment, educated Europeans awoke to a new sense of life. They experienced an expansive sense of power over nature and themselves; the pitiless cycles of epidemics, famines, risky life and early death, devastating war and uneasy peace—the treadmill of human existence—seemed to be yielding at last to the application of critical intelligence. Fear of change, up to then nearly universal, was giving way to fear of stagnation; the word innovation, traditionally an effective term of abuse, became a word of praise (Gay, 1977: 3)

Not surprisingly, this period spawned a whole array of creative thinkers, such as Newton and Voltaire, in multiple domains including science, music, philosophy, literature and the arts. A far cry from the medieval artisan, these creators were thought to be unique—that is to say *geniuses*—with faculties and perceptions that extended well beyond the ordinary (Weiner, 2000). Thus, the French declared that creators were “the most useful of all citizens (<http://wikipedia.org/wiki/Age-of-Enlightenment>). As importantly, with respect to the structure of the system itself, these creators came to constitute an acknowledged group that—on its own—took responsibility for generating, promoting, and sharing the combined knowledge of the age. In no case was this more evident than with the publication of the *Encyclopedie*, where articles by Voltaire, Rousseau, and Montesquieu could be found. Domains multiplied, and were institutionalized, as a result.

Other societal venues for creative interactions and outlets also multiplied. As Gay emphasizes:

[The age of the Enlightenment was] an age of academics—academics of medicine, of agriculture, of literature, each with its prizes, its journals, and its well attended meetings. In the academies and outside them, in factories and workshops and coffeehouses, intelligence, liberated from the bonds of tradition, often heedless of aesthetic scruples or religious restraints, devoted itself to practical results; it kept in touch with scientists and contributed to technological refinements (Gay 1977: 9).

The social order reinforced these developments. Recognizing the importance of innovation to the well being of the state, national governments played a very supportive role. In England, for example, illustrious individuals, such as Sir Frances Drake, Sir Joshua Reynolds, and Sir Isaac Newton, were granted knighthoods. At the same time, laws were established providing for copyright. The

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private sector also played a role. Thus, John Wilkins organized the Royal Society at London for ‘Improving of Natural Knowledge’ in an effort to spur the university beyond its traditional ways. Similar developments occurred in France, where the government sponsored contests and prizes, and helped to set up the French Academy of Science—a semiprivate establishment with ties to the state. Its purpose was to organize new disciplines and train new scientists (http://en.wikipedia.org/wiki/Age_of_Enlightenment). Similarly, in the United States, the Constitution authorized Congress to establish mechanisms to both promote innovation and creativity, as well as to assure the dissemination of the results. These included laws protecting intellectual property rights, the establishment of postal roads, and guarantees to protect free speech (Office of Technology Assessment, 1986).

These new attitudes about creativity provoked changes throughout the entire creativity landscape extending to the outer edges of the social and cultural orders. Turning tradition on its head, Enlightenment thinkers foresaw the possibility of public citizens recreating society, as evidenced by the revolutionary fervor that overtook Europe, as well as the French and American Revolutions (Brinton, 1965). In one fell swoop, European and American intellectuals gave birth to the idea of a new kind of democratic political order, in which innovation and progress were prized above all else (Gay, 1977). Whereas in pre-Enlightenment Europe creators were beholden to God, in the burgeoning US, technological progress was seen as a way of inverting man’s relationship to God and nature by creating a second “Garden of Eden” through science and technology (Smith and Marx, 1998; Hughes, 2004). It was this *Zeitgeist* that later fueled the Industrial revolution.

In bringing about such changes, tools and technology played a major part. One need only think how slowly advances in science might have taken, without the invention of the telescope (Runco, 2007). Bringing in its wake major social, economic, and political changes, the printing press had one of the greatest impacts of all (Eisenstein, 1982). By greatly increasing the speed and reducing the costs of reproduction, printing made it much easier to disseminate ideas. By increasing the general level of literacy, it also made more people susceptible to, and eager to partake of, such ideas. As a result, the market for information products grew, and their economic value was greatly

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enhanced. Later, as books and manuscripts ceased to be isolated on monastery shelves, and became available to many people simultaneously, they began to serve as an important forum for public discussion (OTA, 1992).

With the Enlightenment, then, we begin to see—at all levels—a highly differentiated and diversified creative landscape. For example, in contrast to the Biblical and Medieval periods in which the social order, the cultural realm, and the network of creative actors functioned as one, during the Enlightenment they were set apart, as new channels of communication loosened established ties and undermined the forces of fusion. Likewise, whereas, early on, the subcomponents of the system—the domains, gatekeepers, and creative actors—essentially mirrored the larger components in which they were embedded, by the time of the Enlightenment, these subcomponents were less embedded and more differentiated and institutionalized in their own right.

Looking at the cultural realm, for example, we find that by the time of the Enlightenment there were many more domains, each set off from one another as well as from the culture at large. As importantly, domains were no longer linked solely to gatekeepers in the social order. As evidenced by the French coffee houses, and the widespread exchange of printed documents, knowledge domains often bypassed traditional gatekeepers, by linking directly to creators, inventors, printers and the public itself. Characterizing the impact of the printing press on domain knowledge, Eisenstein points out:

Vernacular science writing enlarged and democratized the Commonwealth of learning. It extended the range of talents that were tapped, linked instrument making with mathematical theorizing, and helped to propel data collection (Eisenstein, 1979: 539)

As importantly, printed sources allowed scholars and intellectuals to accumulate and refine domain knowledge as well as to collaborate and dialogue with leading thinkers across national borders.

Not surprisingly, the social order underwent major changes as well. Given the anti-authoritarian climate of the day, the dominant position of the State and Church were increasingly challenged by other centers of power. Clerics, for example, were no longer the mainstay of the creative domains, having been displaced by more secular and independent scholars

(<http://en.wikipedia.org/wiki/Age-of-Enlightenment>). Likewise, the bourgeois, taking advantage of the

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growing store of written materials, as well as new venues for discussion—such as the coffee houses, the Free Masons, and printers shops—became engaged not only in the cultural arena, but in the political order as well. Publishers took over the role of gatekeepers on behalf of the state. Although state censorship, which aimed to limit seditious literature, was still in place, it was far less heavy handed than in the past. For printing was the growth industry of the time, and governments sought to benefit from this trade. To curb sedition, while taking advantage of a profitable trade, the English Government—for one—aligned itself with the publishers. In exchange for an agreement to enforce the censorship laws, the government granted the publishers’ guild, known as the Stationers, a monopoly right to print, publish and sell works—a copyright (Patterson, 1968)

In this new environment, creators not only became the subject of public acclaim; more importantly, given their rising stature, they were free to define themselves, and—through their art—define the criteria for creativity itself. As importantly, as creators enhanced their own positions by loosening their traditional dependencies and extending their ties and associations out in numerous directions, there was far greater space within the creative landscape for alternative notions of creativity. As a result, the concept of creativity was continually reincarnated, veering, for the most part, between rational and romantic notions. (Sawyer, 2006; Runco 2007)

The Importance of Structure

Looking back through history, we can see that the period of the Enlightenment set forth a trajectory along which the system of creativity in the Western World has evolved. Csikszentmihali’s model of a creative system provides a framework for making sense of this evolution. Applying it, we have seen the state of the components in Csikszentmihali’s system for each of the historical periods considered. However, much more important for thinking about the future, the model allows us to trace how the structure/architecture of the system has changed, in terms both of the whole and each of its parts. With knowledge of these structural changes, we can employ some social network theories to draw conclusions about the kind of architecture that is most conducive to creativity as well as where creativity might be heading in the United States today.

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First, a word about social network theory is in order. Social network analysis provides a way of linking structural variables to social outcomes. Commenting on the importance of taking structural variables into account when analyzing social situations, Knoke and Kulinski (1982) note:

The structure of relations among actors and the location of individual actors in the network have important behavioral, perceptual and attitudinal consequences both for the individual units and for the system as a whole. . . .Regardless of the particularities of a given structural analysis, virtually all network analysts share the presumption that a complete explanation for some social phenomenon requires knowledge about the relationship among system actors. To ignore structure gives, at best, a deficient explanation and at worse, an incorrect one (as cited in Knoke, 1990).

There have, in fact, been an increasing number of studies that demonstrate the relationship between social structure and outcomes. Most important for a paper about the creativity landscape are those analysts that relate network structure to learning and knowledge sharing, and to the articulation of such knowledge in some type of artifact or performance. Among these, for example, is the work of Mark Granovetter, who found that weak ties among social actors are conducive to the diffusion of information (Granovetter, 1973). Similarly Ron Burt has shown how gaps in the social structure—which he characterizes as structural holes—generate social capital in the form of knowledge resources and the influence to capitalize on it (Burt 2005). Doug MacAdam, for his part, has demonstrated that, in the case of social movements, strong ties are essential for carrying out collective action (Fernandez and MacAdam, 1988.) Likewise, Brian Uzzi has illustrated how network density and cohesion are related to trust and innovation (Uzzi, 1996). Economic geographer Allan Scott has shown, moreover, that while creative production networks benefit from dense interconnections, their distribution networks are weakly linked in many directions (Scott, 2000).

To explore these ideas further, let us consider first the role of ‘weak ties’ in the network. There is considerable agreement in the social network literature to the effect that new, innovative information is typically accessed and diffused via relationships that bridge gaps in the social structure (Granovetter, 1973; Rogers, 2003; Burt 2005). The rationale underlying this perspective is that people who are in closed networks, or clusters, are tightly linked through strong reciprocal ties. As a result, the views they hold, and the information they possess, are likely to be the same—that is to say

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redundant. At the same time, social pressures among the members of a cluster to maintain the status quo is likely to inhibit the acceptance of new, innovative ideas (Burt, 2005, Rogers 2003; Granovetter, 1973). In contrast, members of different network clusters are likely to possess diverse information and ideas. Thus, those who bridge the gaps—or as Burt describes them, structural holes—will likely garner new and, for that reason, highly valuable information (Burt, 2005; Zaheer and Bell, 2005; Tsai, 2001). As Rogers describes it:

Our intimate friends are usually friends of each other's forming a close-knit clique. . . .Such an ingrown system is an extremely poor net in which to catch new information from one's environment. Much more useful for gaining such information are the individuals more distance (weaker) acquaintances; they are more likely to possess information that the individual does not already possess (Rogers, 2003: 54).

Information in a network will also be redundant, and hence less valuable, to the extent that the individuals who constitute the nodes in the network are 'structurally equivalent.' People are structurally equivalent, when they "have similar relations to external groups such as a functional category in a company or an industry in the economy" (Burt, 2005: 11). Under such circumstances, individuals are likely to have similar perspectives not only because they have equivalent experiences but also because they have links to the same people, and hence are subject to the same information (Knoke, 1990: 11). A bureaucracy is a classic example of a network that is high in structural equivalence (Burt, 2005). Accordingly, as Burt notes, when there is a tight bureaucracy connecting persons in separate clusters, there will be less innovative information available (Burt, 2005:20).

But, as we have discussed earlier with respect to individual creativity, having access to information and knowledge is not enough; to produce creative results on a recognizable scale individuals must act collectively (Sawyer, 2006). Achieving such collective action is often problematic, however. To begin with, collective action is costly; the costs include not only those entailed in bringing actors together and coordinating their actions; but also in setting up a governance structure and maintaining it over time (Litwak and Hylton, 1962; Gulati and Singh, 1978). Compounding the problem of cost is the fact that, in a group environment in which everyone can access the benefits, individual actors have an incentive to free ride, leaving it to others to do the job (Olson, 1971; Cornes and Sandler, 1996).

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Because individual decisions are contingent on the behavior of others, network structure is an important determinant of collective action. In this regard, most analysts would agree that individuals will arrive at collective action more rapidly to the extent that they are organized in densely connected, closed groups, or clusters. The arguments favoring clusters as a key variable in the creativity process are as follows. For one, because actors are strongly connected within a cluster, innovative-related information and the influence that is associated with it can travel quickly from an initial seed location along a series of multiple paths (Krackhardt, 1991). As importantly, because clusters are comprised of like-minded people, actors in a cluster tend to reinforce each other's behavior even to the point of generating a common identity (Passey, 2003; Burt, 2005). As a result, members of a group are inclined to act collectively (Burt, 2005). Close knit groups also give rise to norms of behavior that serve to reduce opportunism and enhance trust. Because group activities are more transparent, actors can more easily witness the participation of others, and therefore be assured that their own contributions will be effective and equitable, two more determinants of collective action, according to Gould (Gould, 1993).

Taking these two considerations—weak ties and dense clusters—into account, the ideal position for a group to be in, according to Burt, is structural autonomy: A structurally autonomous group consists of people strongly connected to one another, with extensive bridge relations beyond the groups. A structurally autonomous group has a strong reputation mechanism aligning people inside the group, and a strong vision advantage from brokerage outside the group. For example, they have a creative view of valuable projects, who to involve, and they work together to make it happen (Burt, 2005: 141; Fleming and Marx, 2006).

At the meta-level, the ideal network for fostering creativity is a small world network, characterized by dense clusters throughout, which are linked by weak ties. The clustering is essential for the creation of an idea, whereas the weak ties are necessary for its elaboration and diffusion throughout the network today (Scott, 2000; Fleming and Marx, 2006). As Burt explains:

Across the clusters in an organization or a market creativity is a diffusion process of repeated discovery. A good idea is carried across structural holes to be discovered in one cluster of people, rediscovered in another and then rediscovered in still others—each discovery is no

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less an experience of creativity for people encountering the good idea. Value accumulates as an idea moves through the social structure, each transmission having the potential to add value (Burt, 2005: 65).

These lessons from social network theory can help explain the tremendous growth in creativity that occurred from the period of the Renaissance throughout the period of the Enlightenment. In the earliest periods, for example, the creativity landscape was organized hierarchically, so structural equivalence was at a maximum. The system was one big cluster, with all of the domains, gatekeepers, and creators overlapping and contained inside. Under these circumstances, there were few, if any, independent actors who could provide non-redundant feedback into the system. It was stagnant as a result. With the Renaissance, came the rise of city-states and with them a surge of creativity. The Italian city-states functioned as dense clusters, in which intense interactions and thick institutions gave rise to a cooperative milieu as well as economies of agglomeration and positive externalities that fostered new ways of doing things (Ash Amin, 1995; Jonansson, 2004). This creativity was, however, relatively self-contained, because the proportion of weak ties as compared to strong ties was still relatively low. As one might expect, with the advent of the Enlightenment, the number of clusters where creativity could take place increased significantly, both in terms of number as well as purpose. As importantly, the printing press facilitated the establishment of weak ties, and hence sharing and collaboration, across a wide range of clusters. With this change to a small world network structure, the cultural landscape experienced a phase transition.

Looking to the Future

Some have characterized the shift from the Fordist economy to the “New Economy,” as evidence of a ‘punctuated disequilibrium’, or phase transition, within the economy, which is leading to a major restructuring of economic relations (Kelly, 1994; OTA, 1996; Axelrod and Cohen, 1999; Scott 2000; DiMaggio, 2001; Fligstein, 2001; Powell 2001; Ernst 2001; Freeman and Louca, 2002; Fleming and Marx, 2006). As might be expected, this transformation has major implications for the creativity landscape.

In this new, highly complex and rapidly changing global economy, gaining competitive

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advantage depends increasingly, on the effectiveness of businesses—on their ability to innovate, respond just-in-time, focus on quality, and establish more cooperative inter-firm and intra-firm relationships. Instead of standardization, flexible production systems are called for, which allow businesses to respond quickly to changing demand, and to customize their products without sacrificing economies of scope. Under the circumstances, traditional vertical bureaucracies are being pushed to their limits. Businesses, everywhere, are increasingly purchasing in the market what they need, whether pre-assembled parts, logistical support systems, or customized communication service of packaged business information. Thus, according to Michael Storper, vertical integration dropped 9 percentage points between the years 1987 and 1997 (Storper, 1997: 6). Characterizing this situation, Powell writes:

The boundaries of many firms have become so porous that to focus on boundaries is to see trees in a forest of interorganizational relations. The core competence of the firm, to use the new argot, is based on knowledge production and building a sustainable advantage that can be leveraged across products and services, thus meshing firms in all manner of interrelationships and markets that were once called industries (Powell, 2001: 35)

These developments are attributable in part to the tremendous increase in the speed and intensity of communication (Ernst, 2001; Powell, 2001; Garcia, 2001). These technologies have not only extended the reach of market transactions, but also—and perhaps more importantly—they have greatly enhanced the density and functionality of market transactions, thereby generating the kinds of economies of agglomeration that hitherto were available only in tight knit, urban markets. Using these technologies, businesses can integrate and compress the time from production innovation to marketing to drive demand and maximize customer responsiveness. Coupled together loosely, firms can rearrange their activities and networks to bring together everyone involved in the life cycle of a product. Working together and sharing the same information, they can carry out all business processes in parallel.

These developments have not, as many predicted, eliminated the importance of hierarchy in the economy (Kelly, 1994; Gilder, 2000). Instead, we see the emergence of new hierarchies in place of the old (Powell, 2001). For example, today we find that, in an effort to cope with intensified competition

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and the uncertainty associated with the fast changing global economy, some firms have reconfigured their operations on a global basis, reintegrating their supply, knowledge and customer bases into what Ernst has described as “global flagship networks.” As Ernst characterizes them:

The concept of a [global production network] covers both intra-firm and interfirm forms of coordination; it links together the firms own subsidiaries, affiliates and joint ventures with its subcontractors, suppliers, service providers, as well as partners in strategic alliances. These arrangements may, or may not involve ownership of equity stakes. A network flagship like IBM or Intel breaks down the value chain into a variety of discrete functions and locates them wherever they can be carried out most effectively, where they improve the firm’s access to resources and capabilities and where they are needed to facilitate the penetration of important growth markets (Ernst, 2001: 7).

Just as the new economy has not eliminated the role of hierarchy in the marketplace, neither has it undermined the importance of place, as some predicted (O’Brian 1992). In fact, in the absence of economic and political boundaries, global flagships and specific places are becoming increasingly intertwined. As a result, new, expanded industrial urban regions are emerging to form the center of today’s global economic activities. Describing the new geography of the networked global economy, as it is presently unfolding, Scott notes:

. . . the developed areas of the world are represented as a system of polarized regional economies each consisting of a central metropolitan area and a surrounded hinterland (of indefinite extent) occupied by ancillary communities, prosperous agricultural zones, smaller tributary centers and the like. . . . Each metropolitan nucleus is the size of intricate networks of specialized but complementary forms of economic activity, together with large, multifaceted local markets, and each is a locus of powerful agglomeration economies and increasing return effects. . . . this aspect of globalization is giving rise to totally new types of products and production techniques that are embedded in territorial locals (Scott, 1998: 68).

Thus, we find today that that 40 percent of the labor force works in counties that together make up only 1.5 percent of the US land mass, and that, in many sectors and their related geographic areas, employment is becoming increasingly dense (Scott and Storper, 2003). One result of the growing ties between economic firms and local centers of production is the emergence of an hierarchical structure of global cities and their city regions (Sassen, 2001; Garcia 2002; Storper and Scott, 1997)

These developments are nowhere more pronounced than in the case of cultural production. As we have seen from our discussion of the Renaissance, cities have long been central to the creative process. Today, however, select, top-tier cities are becoming highly differentiated based on the type of cultural artifact—film, publishing, jewelry making, furniture, etc—associated with them. These

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cities are highly innovative; they benefit not only from the positive externalities and emergent effects of location specific interactions, but also from the significant economies of agglomeration to be found in large city regions. The result is a reconfigured hierarchical distribution of cities, with today's "creative cities", which are optimized for flexible production, rising to the top, while the old, Fordist cities, which were organized around standardized, mass production, falling to the bottom (Powell 2001; Scott, 2000).

Equally striking, in these cities the line between cultural and economic activities is blurring. Thus, for example, for-profit companies are now commodifying local themes and meanings, and incorporating them into their production and marketing strategies. At the same time, traditional economic products are becoming increasingly imbued with aesthetic and semiotic significance (Scott, 2000). In the process, local economic activities are absorbing aspects of local cultures, while the same economic activities are giving rise to new creative capacities. The result is that cultural products are becoming branded by place names, providing them not only a competitive advantage but even more important—as Scott describes it—a "monopoly of place" (Scott, 2000). Because demand for such products is being reinforced by the growth of disposable income and leisure time, as well as their distribution on a global scale, cultural production is fast becoming the growth industry of the new capitalist economy. According to Florida, for example, the creative sector in the United States now accounts for \$1.7 trillion, an amount equal to that earned by the manufacturing and service sectors taken together (Florida, 2002: xiv).

The organization of work has been subject to many of the same influences, especially in the creative sector. For example, while the number of people working in this area has risen significantly, the number of organizationally based jobs is on the decline (Powell, 2001). Responding to the need for quick response and flexible production, firms are adopting a project-oriented approach to the organization of work. Thus, they are eliminating many permanent workers in favor of 'contingent workers,' who move from gig to gig as the need for them arises (Powell, 2001). In search of new opportunities, creative workers are most likely to assemble in dense, city regions where they have ready access to new projects, stimulating ideas, people like themselves, as well as a technological and

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financial infrastructure to support their activities and interests (Florida, 2000). Now on their own, they have loosened their dense ties to traditional business organizations and social groups, and replaced them with weak ties to what Florida contends to be a new “creative class” (Florida, 2002). In this new context, the incentives and skills that creators must possess are undergoing considerable change; to be successful, it is not enough to have technical and artistic skills; increasingly, increasingly creators need entrepreneurial and promotional skills as well (Sawyer, 2006)

This convergence between the realm of culture and the economy is also played out in other areas of the creativity landscape. Consider, for instance, the role of gatekeepers. While traditional gatekeepers such as curators, publishers, and critics continue to play an important role, new types of market-oriented gatekeepers now dominate the mix. These include, for example, venture capitalists and other types of finance companies, business strategies, stockholders, and boardroom members, not to mention, of course, the consumer and the demand pull of the market itself. Hence, the criteria for determining what constitutes creativity are rarely based on consensual standards of quality, but rather on how new a product is, and whether or not it will sell (Weiner, 2000). The problem of setting standards for creativity is compounded by the fact that the number of domains has not only increased; domains are now accessible to almost anyone. As Weiner has argued, in today’s postmodern world, almost every activity is creative, and almost everyone a creator (Weiner, 2000), so judgment is considered relative. Not surprisingly, therefore, preparation for creativity gigs increasingly takes place, not in established universities and academies, but more often than not in the context of the market. In fact, today, teaching creativity is itself becoming a big business. As Weiner bemoans:

...with art everything and everywhere, its meaning is up for grabs, and its value seems to be whatever the market will bear. Sometimes we cannot even tell if the ‘artist’ is a charlatan, hoping we will pay reverence and money for junk (Weiner, 2001: 100).

Summing up, one might ask: How does this description of today’s creativity landscape add up in Csikszentmihalyi’s terms. Has the system evolved in a linear fashion, or is it taking a significant turn? Comparing today’s creativity landscape to earlier periods, as well as interpreting it in terms of the concept of small worlds, we shall encounter some startling insights.

Conclusion and Policy Implications

Paradoxically, just as scholars and other social observers are emphasizing the importance of creativity to the growth and competitiveness of the economy, there are intimations that levels of creativity—as measured by individual attributes—is on the decline. As described in a recent [Newsweek](#) report:

Kyung Hee Kim at the College of William and Mary. . . found creativity scores (based on the well known Torrance tests) had been steadily rising, just like IQ scores, until 1990. Since then, creativity scores have consistently inched downward. ‘It’s very clear, and the decrease is very significant,’ Kim says. It is the scores of younger children in America—from kindergarten through sixth grade—for whom declines [are] ‘most serious’ (Bronson and Ask Merryman, 2010: 45).

Equally significant, other countries around the world are making creativity a top priority. Thus for example, in 2008, the British overhauled their entire secondary-school curricula to incorporate idea generation. Likewise, in 2009, the European Union dedicated a number of efforts to promote creativity. These included conferences on creativity and neuroscience, the funding of teacher training, and new curricula to incorporate problem-based learning programs. In China, similar efforts are underway to replace the traditional drill and memory style of learning with a more problem-based learning approach (Bronson and Merryman, 2010:45).

On a broader scale, one must question—as Richard Florida has—whether or not the rise of the creative class, and the emergence of a hierarchy of creative cities, will not exacerbate America’s social divisions, and in particular our cultural wars. As Florida points out, today’s creative types are freewheeling. They are inclined to situate themselves in city regions characterized by diversity and bohemian living, the very conditions that are anathema to those living in the hinterlands (Florida, 2002). One need only consider the intense battles over immigration, and recent states’ efforts to cloister themselves away by ‘purifying’ textbooks and purging them of dangerous ideas.

Given our individualist culture, it is understandable that our attempts to address the ‘creativity crisis,’ have focused primarily on the individual. We assume that if we teach our children to be more problem oriented; train our business people how to develop creativity skills; and if we reward creative actors with intellectual property rights, then—*ipso facto*—a culture of creativity will emerge.

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Not so! As has been argued throughout this paper, creativity is not a set of attributes nor a thing to be measured; it is a process, or—as Csiskzentimihali would have it—a system whose architecture, or structure, is a major factor in determining creativity outcomes.

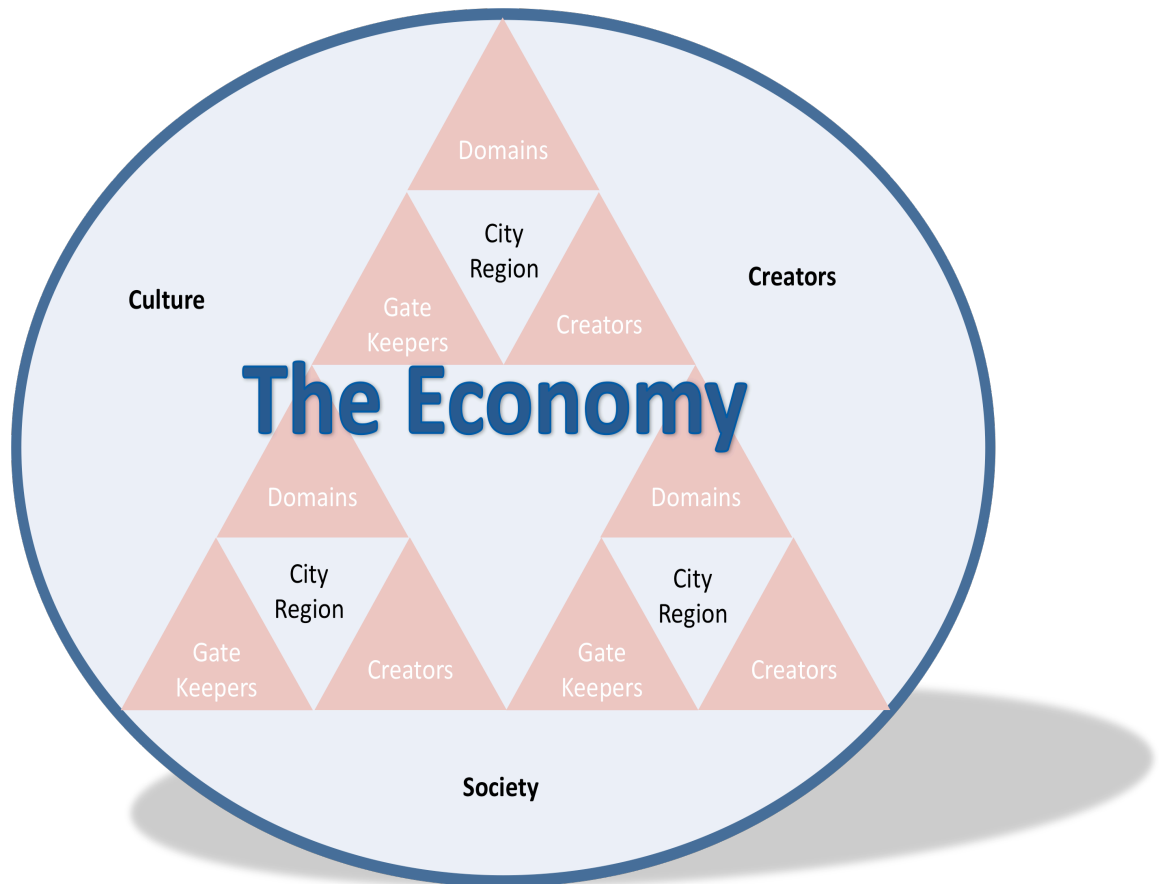
To identify potential policy levers from a more systemic perspective, we must consider how well the US creativity landscape approximates a small world, in which the component are well-defined and differentiated clusters of activities, which are linked throughout the system by weak ties. We have seen this structure, and the resultant outpouring of creativity, during the period of the Enlightenment. Significantly, the creativity landscape in the United States today diverges from this ideal situation in a number of ways.

Looking at the system as a whole, what is most noteworthy is the increasing dominance of the market, not only in the social order but also in the cultural arena, and in the lives of creative actors as well. We find, for example, that cultural artifacts and economic products are harder and harder to tell apart. Likewise, we see that social activities and interactions are now embedded in economic relationships, rather than—as has traditionally been the case—the other way around. Not surprisingly, in this context, today's creativity gatekeepers stem less and less from a cultural milieu, and more and more from the worlds of business, finance, and advertising. Moreover, these same economic actors have assumed a far greater role not only in establishing the domains of the creativity landscape, but also in determining their legitimate content. To keep up with the changes in the system, creators have not only learned to be entrepreneurs; they have at one and the same time freed themselves from the ties that bound them to dense, cohesive social groups in favor of relatively loose ties within large city regions, where creative and economic activities have converged.

Looking at how this landscape might map onto Csizsentimihai's framework, we might see—as depicted in figure 2 below—a system made up of one large cluster—the market—linked together by many, many weak ties, which are based primarily on economic interactions. Thus, In contrast to the small world of the Enlightenment era, we would see a hierarchical structure, based on global cities and global flagship networks. Reminiscent of the creativity landscapes of the early Biblical and Medieval periods, today's system would likewise be subject to the problem of structural equivalence, and hence

the constraints on knowledge and learning that such a structure entails. Ironically, at a time when interest in and support for creativity is at its height, our efforts to make the most of it may have unintended consequences. Care must be taken not to kill the goose that laid the golden eggs!

Figure Two: The New Creativity Landscape



While a policy analysis focusing on creativity must await additional follow-up work, the policy implications of this discussion are rather clear. Because the policy landscape is constituted of components that co-evolve over time, policy strategies intended to promote creativity must take into account the relation of these components, one to another, as well as the structure of the system as a whole. Were we to pursue such an approach, for example, we would think of the granting of

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intellectual property rights not simply as an incentive to induce individual creativity, but also, and as importantly, as a way of gatekeeping—as in the patent system—and as a means of encouraging the dissemination of knowledge. At the same time, we might seek to reduce the structural equivalence in the creativity landscape, by reintroducing needed social structure where it no longer exists. As Csikszentmihalyi has pointed, it is far easier to promote creativity at the system level, than it is to teach creativity to every individual (Csikszentmihalyi, 1999). For, even after individuals have gained creative skills, they still must negotiate, and be supported by, a well-structured creativity landscape.

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