This passage from Denk’s essay captures the essence of creative work: intersecting currents of thought; problem solving marked by both urgency and reflection; and exploration that is focused but also meanders and allows for serendipity and unexpected associations and insights. Moreover, Denk demonstrates the power of analogical reasoning to solve creative problems when he uses the image of the river to rethink how he will play the Ives Piano Trio. To continue the metaphor, to what extent do our universities and colleges resemble the Connecticut River—creative, dynamic sites that advance the wide, expansive of human knowledge and culture, while allowing for a million intersecting currents and meandering multiplicity? In this essay, I explore the relationship between higher education and creativity. I argue that creativity should be at the heart of a university education, yet existing trends and institutional pressures often undermine its central role on our campuses. I contend that creativity is not a mysterious and magical quality that only a few possess. Rather, cognitive scientists, psychologists, and sociologists know a great deal about how to measure, stimulate, and support creative work. Importantly, while the arts do not have a monopoly on creativity, there is increasing evidence that certain types of artistic training and experiences build creative muscle and prepare us to innovate and invent in many areas of our lives.

The Creative Imperative

Over the past decade, economists, urban planners, sociologists, and journalists have been busy ringing the creativity bell—announcing to politicians, educators, business leaders and others that success in the twenty-first century requires a new approach to problem solving. This new approach is rooted in right-brain thinking that favors storytelling, empathetic reasoning, and aesthetic sophistication: It requires tolerating ambiguity and embracing complexity; thinking laterally; working across disciplines and fields of expertise; and being tolerant and open minded. Many contend that we live in a postindustrial economy where intellectual property is valued more than physical assets like land, machines, and buildings. Others describe an enterprise economy where people are “living on thin air” and success requires inventing services and new forms of entertainment and media to satisfy needs not yet known or acknowledged. And, many of the most wicked and entrenched social, medical, and scientific problems—poverty, school reform, global warming, obesity, malaria, Alzheimer’s disease—require interdisciplinary creative teams working together to find nonroutine solutions.

Richard Florida has perhaps done more than anyone to get the attention of policy makers and to make creativity a central tenet of urban economic growth strategies. His best-selling book, The Rise of the Creative Class, champions the rapidly growing slice of the American workforce that includes designers, software engineers, writers, animators, musicians, and others who are primarily working in industries that produce intellectual property. Florida argues that the most successful twenty-first-century cities will be

5. Steven J. Tepper, Meandering Multiplicity: Envisioning a Twenty-First-Century Creative Campus

In a recent article in the New Yorker magazine, pianist Jeremy Denk recounts a summer at music camp at Mount Holyoke College, where he was struggling to learn a particularly difficult segment of Charles Ives’s demanding Piano Trio. His breakthrough came when he and friends drove a few miles off campus to the Connecticut River. He writes, “From the bridge the river seemed impossibly wide, and instead of a single current there seemed to be a million intersecting currents—urgent and lazy rivers within the river, magical pockets of no motion at all. The late-afternoon light colored the water pink and orange and gold. It was the most beautiful, patient, meandering multiplicity. Instantly, I knew how to play the passage.”
the services to provide its students. In the past, schools have offered courses in a wide range of disciplines, and the percentage of students who receive degrees in these disciplines has been very low. However, in recent years, there has been a significant increase in the number of students choosing to pursue degrees in the arts and humanities. This trend is expected to continue in the future, as more and more students seek to develop their creative and critical thinking skills. 

In summary, the demand for creativity in our society is growing, and the need for creative individuals is increasing. As a result, our educational institutions must adapt to meet the needs of these students and prepare them for success in the future. This requires a commitment to innovation and experimentation, as well as a willingness to take risks and try new things. Only through a continued focus on creativity can we ensure a vibrant and dynamic future for ourselves, our families, and our communities.
that over the past decade more than 100 traditional four-year colleges have closed, and the number of cor-
porate and online universities has grown by more than
ten times.12 But, these new educational institu-
tions—effluent and profitable as they may be—are not well suited to producing creative, resilient prob-
lem solvers who can make connections across do-
 mains of knowledge, incorporate critical feedback, 
radically revise their work, and embrace the ambigu-
ity and messiness of complex puzzles.

More evidence from the social sciences supports the 
conclusion that the industrial model of education, 
with its emphasis on the efficient accumulation of 
knowledge and standardized testing, discourages 
creative thinking. Sohee Park, a psychologist at 
Vanderbilt, studies creativity and cognition. She 
notes that students who do very well on standardized 
tests have a great ability to focus intently and to 
screen out any “distracting information” or “remote 
associations.”13 As a result, they typically score much 
lower on a range of creativity tests. On the other hand, 
students whose brains are “messier,” less efficient, 
and more prone to distraction can typically come up 
with much more creative ideas. Here is a wonderful 
example of the difference between two undergradu-
ates—the first subject was highly focused and likely a 
good test taker; the second tended to allow “distract-
ing” information to enter into his thinking. When 
face with a set of images—toothbrush, toothpaste, 
flower, for example—both subjects were asked to gen-
erate “uses” for the objects. The first subject (let’s say 
the likely high SAT subject), wrote, “I would use the 

toothpaste on my toothbrush and then use the floss to 
clean my teeth every night.” The second subject wrote, 
“I am romantic but I am broke. I will take my girlfriend 
to the beach and I’ll use the toothbrush to 
write ‘I love you’ on the sand and make an engage-
ment ring with the floss, I will squeeze the toothpaste 
on the floss and dry it to make it look like a pearl so she 
can have a pearl ring.”14 Would you want to live in a 
world that focuses exclusively on rewarding and se-
lecting the first type of thinker? If we care about cre-
ativity across the spectrum, we need to stop orienting 
educational rewards around the first type of thinker 
at the exclusion of the second.

Training in Creativity and the Role of the Arts

The first step then is for universities to embrace cre-
ativity as a critical learning outcome. While creativity 
can mean many things, a useful starting point is to 
think of a creative person as someone who draws on 
nonroutine approaches to solve problems, successful-
ly communicates the value of their approach to others, 
and mobilizes resources to realize their idea in an ap-
propriate form. But, if we are to make creativity a core 
learning objective, then we need a way to measure 
what has traditionally been viewed as mysterious and 
illusive. In fact, many extraordinarily creative people 
attribute their insights to epiphanies, unconnected thought, and deep drives and passions that are diffi-
cult to articulate. Nonetheless, over 40 years of re-
search in psychology and cognitive science has yield-
ed a variety of valid ways to measure and assess 
creativity. For example, the psychologist Robert J. 
Sternberg has developed a creativity test that uses 
alogies, open-ended stories and pictures, and diver-
gent-thinking tests to measure creativity. It turns out 
that knowing what an incoming student is creative 
on Sternberg’s measures is a more-reliable predictor 
of freshman academic success than are more-tradi-
tional measures like the SAT or high school G.P.A.15

But, even if we can measure creativity with some pre-
cision, perhaps it is a product of personality or indi-
vidual psychology and not something that can be 
learned or taught in every course. Again, social science research 
suggests this is not the case. Creativity involves a set 
of teachable competencies, which include idea gener-
ation, improvisation, metaphorical and analogical 
reasoning, divergent thinking that explores many 
possible solutions, counterfactual reasoning, and 
synthesis of competing solutions. Creativity also re-
quires an ability to communicate and persuade, and 
the skills and leadership to bring together diverse and 
specialized expertise. Rex Jung, a neuroscientist 
from the University of New Mexico, concludes that 
these competencies can be purposefully nurtured.

“Those who diligently practice creative activities 
learn to recruit their brains’ creative networks quicker 
and better.”16 In his recent study of schools of art and 
design, the creativity scholar Keith Sawyer concludes 
that the “studio model” is a proven method for teach-
ing creativity. The model involves project-based cur-
ricula where students, guided and coached by in-
structors, work through complex and authentic problems that require making and presenting visible artifacts to an external audience. He argues such teaching is “best thought of as an improvisational ac-
tivity, and that the best teaching is disciplined impro-
visation: teaching that provides space for the flexibili-
arity required for constructivist learning, but guided 
within structures and frameworks—in a similar fash-
ion to professionally performed improvisations found 
in jazz and improv.”17

Research in cognition and brain science further sug-
gests that the arts play a special role in fostering cre-
inuity. David Perkins, a cognitive psychologist, 
has found that creative people rely on a tool kit of ana-
litical and cognitive strategies and “thinking disposi-
tions” for solving puzzles. Art can be a powerful tool 
that boosts creativity. In particular, Perkins finds that looking at visual art helps build “reflective intelligence”—a set of habits and dispositions that allow us to avoid snap 
judgments, see patterns, make connections, and deeply consider and evaluate the many small steps and 
possible solutions made by an artist. In short, art builds “better thinking.”18 Kevin Dunbar, a neuroscientist at 
the University of Toronto, has arrived at similar conclu-
sions using brain scans. Initial research in his lab has 
found that participation in the performing arts acti-
vates areas of the brain that are critical for higher-or-
der creative thinking—including analogical reason-
ning and abstract thinking.19

And while the arts do not have a monopoly on teach-
ing creativity, recent evidence from a national study 
conducted by the Curb Center at Vanderbilt Universi-
ity, with Teagle Foundation support, found that arts 
majors integrate and use core creative abilities more 
ofen and more creatively than most all other fields of study.20 For example, 53 per-
cent of arts majors say that ambiguity is a routine part 
of their coursework, as assignments can be taken 
in multiple directions. Only 9 percent of biology majors 
say that, 13 percent of economics and business ma-
jors, 10 percent of engineering majors, and 7 percent 
of physical-science majors. Four-fifths of artists say 
that expressing creativity is typically required in their 
courses, compared with only 3 percent of biology ma-
jors, 16 percent of economics and business majors, 13 
percent of engineers, and 10 percent of physical-sci-
ence majors. And arts majors show comparative ad-
vantages over other majors on additional creativity 
skills—reporting that they are much more likely to 
have to make connections across different courses 
and reading, more likely to deploy their curiosity and 
imagination, more likely to say their coursework pro-
vides multiple ways of looking at a problem, and more 
likely to say that courses require risk taking.

Moreover, arts graduates say their education helped 
them become more creative even outside of an artistic 
career. According to a national survey of more than 
35,000 arts graduates, even those who are working in 
non-art occupations, say they learned important cre-
ative skills in school that they use in their jobs.21 For 
example, among arts graduates who ended up as 
managers, software developers, or social-service workers—both generally upward facing jobs—art 
is an important skill in their jobs; of those, more than four-
fifths say their arts training provided a lot or quite a 
bit of training in creativity.

The arts are not grace notes on our campuses. They 
should not be viewed as one of many amenities and 
 lifestyle options that “students/consumers” can 
choose among when they arrive on campus. Social 
and cognitive science has demonstrated a strong link 
between artistic expression and creative thinking. 
Not all arts engagement enhances creativity (practic-
sing a Dvorak piano quintet 100 times is not necessari-
ly the route to invention and nonroutine insights).

13 Sohee Park, Persuasive interviews with author, spring 2013.
14 Ibid.
17 Perkins, David “The Intelligent Eye: Seeing, Thinking, and How Creativity Works” (Santa Monica, CA: Getty Center for 
Education in the Arts, 1997).
18 Kevin M. Dunbar, Arts Education, Creativity, and Careers: 2011 Findings 
(Bloomington: Indiana University Center for Postsecondary Research, 2012).
But “disciplined improvisation”—the essence of learning to create something original within the parameters of existing convention—is a foundation for creative inquiry more broadly and a cornerstone of artistic practice.

It is time for a sea (“C”) change in higher education—one that places creative inquiry at the heart of campus life. Last week when strolling through the main hall of a prominent building on campus, I looked toward the window of the three-story atrium and read these words etched above a double stone arch: “The Brain—is wider than the Sky—”. When Emily Dickinson wrote these words, she was not considering the evidence from cognitive science, psychology, and sociology—that the adult brain would prefer to reside within the comfort of a familiar blue sky than risk the chaos of the unknown. Our institutions are willing accomplices in the brain’s escape from uncertainty—emphasizing control rather than surprise, metrics rather than meaning, achievement over inquiry, and outcomes over process. We need a radically new approach; one that might benefit from what the arts have to offer. As the distinguished education scholar Elliot Eisner notes, “The arts teach students to act and to judge in the absence of rule, to rely on feel, to pay attention to nuance, to act and appraise the consequences of one’s choices, and to revise and then to make other choices.” In short, echoing the evidence presented in this essay, Eisner suggests that the arts might expose students to the realities of a complex and creative world far better than “the tidy right-angled boxes” we employ daily in our classrooms.

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