

Chapter 1

THE CREATIVITY CRISIS

On July 10, 2010, a *Newsweek* cover story revealing my research on creativity “dropped like a bomb,” as a newsletter at the University of Georgia put it.¹ As soon as the article—“The Creativity Crisis in America” by Po Bronson and Ashley Merryman—was published, scores of reporters wanted to interview me, spawning a flood of articles and news stories. The media frenzy was caused by my research finding that creativity in America was decreasing. According to *Newsweek*, “Kim found creativity scores had been steadily rising, just like IQ scores, until 1990. Since then, creativity scores have consistently inched downward.” The article also explained how I found this decline was most serious among a particular group of individuals—children enrolled in kindergarten through sixth grade.²

To say that I, a college professor, was completely unprepared for the outpouring of interest in my research, sparked by a single magazine article, would be putting it lightly. But I had clearly touched a raw nerve within the American psyche—one that continues to be a sore spot today.

THE DECLINE OF CREATIVITY IN AMERICA

The study that triggered all this media attention was my analysis of 272,599 creativity-test scores using the Torrance Tests of Creative Thinking (TTCT for short). The TTCT is the most commonly used creativity test.³ My analysis spanned individuals from kindergartners through adults, between the years 1966 and 2008, in all regions of America and some regions of Canada. The study demonstrated that creativity scores of Americans rose steadily from 1966 until 1990. After 1990, however, their creativity scores started significantly declining, while IQ scores continued to rise.⁴

The bottom line is this: Americans are less creative today than they

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were twenty-five years ago. Furthermore, this decline continues with no end in sight—Americans continue to become less creative over time. My analysis broke down each creative attitude and creative thinking individually, showing decreases in a variety of different aspects of creativity such as the attitudes or skills to:⁵

- Generate a large number of unique ideas
- Deal with hidden aspects of problems
- Work out the meaningful details of ideas
- Think in the big picture and distill ideas without losing essence
- Connect seemingly irrelevant ideas
- Articulate ideas and be a storyteller
- Be open-minded to opposing views and delay judgment
- Courageously defy or change existing norms, values, or traditions

To me, the most troubling aspect of this decreasing creativity is its prevalence in young children who should be actually improving their creative attitudes and skills. Not only that, but years after the study came out—despite all the concerns expressed by politicians, educators, and business executives—not much has changed. In fact, the decline in creativity continues unabated. My research shows that America has an increasingly limited number of individuals who are capable of finding and implementing solutions to problems the nation faces today. If this trend isn't reversed soon, America will be unable to tackle the challenges of the future.

Some argue that the fundamental structures that originally supported innovation in America are unchanged, and that the decrease in the number of creative individuals is an anomaly that will have no impact on America's global economic dominance.

I disagree. In the twentieth century, no other country in the world matched the United States of America's ability to turn ideas into innovative solutions to real-world problems. The country became a superpower thanks to the creativity of its people. This creativity was present in 1879 when Thomas Edison filed his light-bulb patent; in 1895 when Nikola Tesla partnered with General Electric to install electricity generators at Niagara Falls—the origin of today's home electricity; in 1927 when Philo Farnsworth *introduced* the electronic television; in 1958 when Jack Kilby *introduced* the integrated circuit; in 1971 when John Blankenbaker *intro-*

duced the first personal computer; and in 2001 when Apple *introduced* the iPod. (None of them really *invented*; they synthesized *existing* ideas, which they transformed into a new creation.)

Creativity is the key to creating highly skilled jobs and technological breakthroughs for future US economic success in international markets.⁶ Without it, the economy will struggle to adapt to the changing world that moves quickly beyond its control; the next Apple, IBM, Google, Amazon, Microsoft, or General Electric will struggle to gain traction, as businesses in other creative countries gain momentum.

THE CREATIVITY CRISIS IN INDIVIDUALS

If America's parenting and educational system continuously condition children to think un-creatively, employers will struggle to hire creative individuals to solve real-world problems and create new opportunities. A significant part of America's economic success has been the result of dynamic young entrepreneurs who serve as incubators for new products or services. Creative individuals who are dreamers and risk takers are needed to keep this sector burgeoning, providing jobs and establishing entirely new industries.

Human beings have an unprecedented ability and potential to create, and many find that in the act of creating they fulfill their true purpose in life. It's this creative process that led to the invention of the simple hammer. The first hammers were simply stones attached to sticks with strips of leather and used to strike wood and animals. Much later, hammers were developed to drive nails into wood—and then clawed hammers, to easily remove them—thereby increasing the utility of this ancient tool. More recent variations include electric, hydraulic, or pneumatic hammers. The utility of the simple hammer continues to become more powerful and efficient. We expect and hope that hammers and other similar, simple tools will continuously evolve as human creativity enhances their design and utility.

When a hammer just sits in a toolbox and never gets used, it serves no purpose. Only when it is used to drive nails and build something—or demolish it—is the hammer fulfilling its purpose. It's the same with human beings. When people are able to express their creativity, they too are utilized to their full potential, which promotes their physical and psycho-

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logical well-being.⁷ When they use their creativity, they experience the joy of seeing their ideas and dreams become real. The excitement of artists or scientists engaged in unique and useful projects are vivid visions of creativity in action.

Individuals whose creativity is stifled become creative underachievers, frustrated, and unhappy with their lives.⁸ Without a supportive climate, society is robbed of the potential achievements of those individuals. Despite all the innovation that has brought America to where it is today, the culture has changed in ways that have stifled creativity instead of encouraging it. America must reclaim what it does best: fostering creativity.

THE CAUSE OF THE CRISIS

The reporters who crowded on my front step after the *Newsweek* article had many questions for me, but mostly they wanted to know who was to blame for the latest American crisis. Unfortunately, there's no single person, entity, or institution that can be singled out. In fact, my research points to a gradual, society-wide shift away from the values that were the foundation of the American creativity. Understanding this shift starts with a look at what shaped American creativity in the first place.

The Home of the Brave

America was established initially by settlers who left behind everything they knew, including family, friends, churches, and businesses—in some cases escaping ideological oppression and tyrannical rule—in hopes of a better life. There were no guarantees that they would successfully find the new lives they were looking for after they arrived. They were risk takers and were optimistic that their hard work could create better futures. When others saw reason for doubt and feared the uncertainty of the future, they and subsequent generations of immigrants accepted uncertainty and saw opportunity. America assimilated newcomers better than most other countries, earning the “melting pot” characterization.⁹ While each wave of newcomers initially faced harassment and exclusionary legislation—the Irish, the Eastern European Jews, the Chinese, the Italians, the Vietnamese, and others—most eventually became tightly interwoven within the American

fabric. This multiculturalism contributed to America's creativity. Even today, immigrants arrive from across the globe, seeking a chance at *their* American dream.

The Founding Innovators

It's no accident that America became a beacon of freedom and opportunity. The Founding *Innovators* (not "Fathers"), including Thomas Jefferson, Alexander Hamilton, Benjamin Franklin, John and Abigail (woman) Adams, and Mercy Otis Warren (woman), built a foundation of entrepreneurial and legal systems that minimized corruption while protecting intellectual property. Subsequently, the early parenting and educational system reflected values important to American creativity, such as intellectual diversity, curiosity, risk taking, and nonconformity. The emergence of America's great entrepreneurial culture encouraged exponential innovation and economic growth.

Sputnik—Space-Age Competition for Creativity

American creativity accelerated after the Soviet Union successfully launched *Sputnik 1* in 1957, the first satellite to orbit Earth. America was humiliated, and its entire scientific and educational system came under intense scrutiny. Concerned for its national survival, leaders urgently sought a plausible explanation and decided that, compared to the Soviet Union, America suffered a lack of creativity in science and engineering. As a result, in the 1960s, federal research and development (R & D) spending was boosted to the highest level in America's history, above 2 percent of the gross domestic product (GDP). (Unfortunately, this amount has since decreased to just 0.78% of GDP as of 2014.¹⁰)

During the 1960s, the American educational system followed suit, investing heavily in science and engineering education.¹¹ Students were eager to learn these subjects, not simply to get good grades, but to create something unique: technology to conquer the high frontier and explore space. Also, research-based teaching methods for fostering students' creativity were integrated into the US educational system. As a result, teaching methods changed from a teacher-controlled approach to a teacher-student interactive approach, which increased creativity from the mid-1960s to the mid-1980s.¹²

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Americans' Insecurity

In the mid-1980s, America shifted into an age of creativity insecurity. *Domestic* insecurity (a desire for financial security and maintaining the status quo, instead of continuing to evolve) and *international* insecurity (a fear of global economic competition) have caused America's creativity to decline since then.¹³

Domestic Insecurity

As middle-class financial security becomes harder to achieve, American parents are more protective of their children and want them to pursue secure careers rather than follow their creative potential.¹⁴ (They used to value children's imagination and originality.)¹⁵ Today, education is seen primarily as a stepping-stone to a safe or lucrative career. Most of today's young Americans—64 percent—see “getting rich” as the single most important goal in life.¹⁶

Another indication of the decline in creativity in America is the decline in private and public R & D funds. The scientific and technological advances—which led to America's ability to create new industries and jobs, improve quality of life for all its citizens, and ensure its national security—were due to the outcomes of R & D. However, from 2000 to 2012, America increased its average annual R & D only 2.3 percent, while Asian countries increased theirs significantly: China (17.6 percent), South Korea (8.8 percent), Taiwan (7.7 percent), and Singapore (6.5 percent).¹⁷ By 2019, China is expected to spend more on R & D than America is.¹⁸ One result of the reduced US R & D spending is that the percentage of US inventors' patents in the US patent office dropped (from 57 to 49 percent) from 1996 to 2014, mainly due to the increased percentage of *Asian* inventors' patents.¹⁹ China has become the number one country with patents in the World Intellectual Property Organization.²⁰

US federal spending on R & D declined (15.4 percent) from 2010 to 2015—with spending on defense R & D declining the most (24.1 percent).²¹ This is unfortunate considering the fact that defense R & D is important not only to national security, but also to the American economy through civilianized spin-off technology. Many innovative technologies were orig-

inally developed by the various military branches and organizations, such as the Defense Advanced Research Projects Agency (DARPA).²² Some of DARPA's innovations, including the Internet, Global Positioning Systems (GPS), real-time speech translation, driverless cars, unmanned aerial vehicles, and invisible stealth aircraft, have made a huge impact on the American (and global) economy.²³ Many innovations developed by defense R & D began in someone's imagination, through science-fiction novels, movies, or video games, which were transformed into innovation through American creativity in engineering, business, and promotion skills.

Another indication of the decline in creativity in America is the decline in college and university research funds over the past two decades. The number of basic research articles published by US researchers in peer-reviewed journals has declined.²⁴ Budget cuts force the National Institutes of Health (NIH) to reject half of the high-quality research proposals it receives each year.²⁵ Even worse, the more creative a proposal for a grant is, the more likely it will be rejected, because funding agencies are reluctant to take risks with limited budgets.²⁶ This leads many of America's creative, young scientists to consider careers in foreign countries, including China, that have increased their investment in science.²⁷ Over the past decade, while the United States decreased funding for basic research, China increased its funding threefold.²⁸

International Insecurity

During the twentieth century, America's strong economy championed globalization, spreading democratic and free-market values around the world. As the rest of the world developed, however, globalization led to increased competition. During the second half of the twentieth century, Asia emerged as America's greatest economic competitor and threat. Starting in the 1970s and reaching a fevered pitch in the brief US recession of the earlier 1980s, many Americans became afraid. They were afraid of Japanese competition, afraid of changes in American society, and afraid that Americans were falling behind the rest of the world.²⁹ Because of Japan's perceived economic success at the time, some American educational experts urged learning from or even copying the Japanese educational system.³⁰ The Georgia Department of Education, for example, revised its mathematics curricula to be more like curricula in Japan, as did others.³¹ However, when

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the Japanese economy stalled during the late 1980s, Americans shifted their anxieties from Japan to other economies that were growing fast at the time. Today, China's economy is growing at such a rapid pace that Americans are once again afraid. This fear has led some to take a deeper look at the source of Asian academic achievements.³²

ASIAN AND ASIAN AMERICAN ACHIEVEMENTS

The results of international assessments show that Asian students fifteen years and older consistently attain higher scores in reading, mathematics, and science than US students of the same age. Out of sixty-five participating countries, US students were seventeenth in reading, twenty-third in science, and thirty-first in mathematics; whereas China, South Korea, Hong Kong, and Singapore all ranked within the top five in these subjects.³³

Asian success has led Americans to examine their way of doing things in America, especially where educational paradigms merge: Asian students in American schools. Asian American students are outpacing other ethnic groups in academic achievement. As of 2006, Asian American students were over-represented (relative to their numbers in the population) in gifted/talented programs in forty-one of the fifty US states.³⁴ The Asian American college enrollment rate is also higher than that of non-Asian students. Based on the 2010 census, 52 percent of Asian Americans attended college or attained a graduate degree, while only 30 percent of whites did the same.³⁵ Further, Asian American students receive more advanced degrees in America than their population numbers would indicate. In 2010, Asian students accounted for 45 percent of doctorates in engineering, 38 percent of doctorates in mathematics and computer sciences, 33 percent of doctorates in the physical sciences, and 25 percent of those in the life sciences.³⁶

More Asian and Asian American students become spelling-bee winners, math wizards, and music prodigies than do non-Asian students. Asian Americans are most likely to fulfill occupations such as doctors, lawyers, or engineers. Despite being only 5.8 percent of the American population, statistics indicate that Asian Americans come from more stable home environments, go to better schools, and get better jobs than non-Asian Americans.³⁷

So, flooded with data showing the academic prowess of Asians and Asian Americans, it's no surprise that US politicians and educational leaders decided that the best policy to address their *insecurity* was to emulate educational systems and culture from Asian countries.

AMERICA TAKES (THE WRONG) ACTION

Faced with an Asian populace that was significantly outperforming non-Asian Americans in so many different ways, US politicians and educational leaders concluded that the education system was broken and required a quick and dramatic change. Instead of focusing on outcompeting Asian countries in terms of creativity, however, they took a shortsighted action to *emulate* Asian education, and a flurry of supporting legislation soon followed: Former president Bill Clinton called for national education standards in 1997. Former president George W. Bush announced the No Child Left Behind (NCLB) Act in 2001. President Barack Obama announced the Common Core State Standards (“Common Core”) with a federal grant program dubbed “Race to the Top” as a continuation of NCLB. These laws continue to exert immense pressure in American classrooms today.³⁸

NCLB's stated goal is to ensure that *all* students receive high-quality education, and thereby to close the achievement gap between advantaged and disadvantaged students. It requires public schools to make Annual Measureable Objectives (AMOs) on state standardized tests in reading/language arts and mathematics for all children in grades three through eight—and once during high school—and then to report the test results.³⁹ If schools don't reach their AMOs for three consecutive years, state-approved “experts” are sent to the schools to implement *quick fixes* meant to get the schools on track. Schools are rewarded or punished through federal funds, and NCLB has become the most controlling and intrusive federal educational policy in American history.⁴⁰ The major result of these laws is a heavy-handed *test-centric* climate in schools.⁴¹ (In a sad bit of irony, I left Korea with a hope that my children wouldn't experience the *exam hell*⁴² of Asian education.) The legislation is generating outcomes that will haunt Americans for many years to come.

Focusing on Standardized Tests Instead of Standards

Today, the state-mandated standardized tests—rather than the state educational standards (Common Core)—exert the greatest pressure on classroom teaching practices.⁴³ Standardized tests don't measure everything, and anything they don't measure—like creativity—becomes unimportant in the classroom. To make sure their schools get proper funding, teachers focus only on teaching the material included in the state-mandated tests.⁴⁴ This naturally channels more time to tested subjects (reading/language arts and mathematics), at the expense of non-tested subjects (such as science, social studies, the humanities, physical education, arts, and foreign languages)⁴⁵ and reducing or eliminating recess.⁴⁶ NCLB also pushes English-only acquisition and discourages preserving students' native language. This runs counter to other nations' focus on language diversity to increase global collaboration.⁴⁷

Because schools are increasingly evaluated using students' performance on these inauthentic assessments (which don't measure *application* of what they've learned to a new situation), teachers have to teach to the tests instead of utilizing more holistic real-world projects or assessments. Teachers squander time teaching test-taking skills, using previously released questions provided by the state.⁴⁸ Schools are pressured to switch to multiple-choice tests in all subjects, and students are molded into test takers who only know how to fill in bubble choices.⁴⁹

Leaving Disadvantaged Students Farther Behind

The decrease in time spent on non-tested subjects is especially harmful to disadvantaged students who are already behind (those in poverty, minorities, the learning disabled, or those who have limited English skills). It harms disadvantaged students in four ways:⁵⁰ First, because they must devote extra time preparing for the tests, they have less opportunity to actually master a subject or learn skills that help them in the long run. Second, because they just memorize facts that are readily accessible with today's computers and devices, they won't be competitive in the information age. Third, because they're not allowed to participate in enriched programs, they have less opportunity to find topics of curiosity or interest that

might lead to a lifelong passion. Finally, focusing on only tested subjects ignores developing the *whole* child, which inhibits teachers from incorporating multiple intelligences (such as music-smart, number-smart, body-smart, word-smart, picture-smart, people-smart, and nature-smart).⁵¹ The lack of whole-child teaching further limits opportunities for disadvantaged students to learn according to their strengths or preferred learning styles. Ironically, spending extra time preparing for tested subjects harms the students that NCLB is supposed to help the most.

On a worldwide scale of funding for education, America is just average, especially with little funding devoted to instructional resources.⁵² (In Asian countries, instructional resources, including teacher professional development, are highly funded. Teachers are highly respected and given better pay and financial incentives, and thus teaching careers are highly competitive.)⁵³ Since NCLB, ironically, the percentage of funds allocated for instructional resources actually *decreased*.⁵⁴ Because NCLB has been wasting money on the quick fixes, it hasn't supported real teacher professional development.⁵⁵ But teachers are forced to take on the responsibility for students' low scores, despite the fact that students' disadvantaged background has *four times* more impact on their scores than does their school's characteristics.⁵⁶ By age three, children from disadvantaged family backgrounds have heard thirty million fewer words (1,251 words per hour) than children from advantaged family backgrounds (2,153 words per hour), which predicts their achievement in school and standardized testing at age ten.⁵⁷ Using a one-size-to-fit-all yardstick, NCLB considers neither students' initial proficiency nor schools' initial standing when sanctioning schools that fail to meet the AMOs.⁵⁸ The sanctioned schools are those that work with the most disadvantaged students, which NCLB ends up punishing instead of supporting. Further, these schools are forced to spend an *even greater* proportion of money on administrative and testing-related expenses, instead of instructional resources.⁵⁹ Over time, their dependence on federal funding makes them even more bureaucratic, which not only limits schools' autonomy and creativity but also makes them even less responsive to their students' needs and decreases their students' test scores.⁶⁰

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Turning Teaching Professionals into Teaching Technicians or Even Cheaters

The legislation reduced teachers' autonomy over decisions such as curriculum adoption and teaching practices.⁶¹ It also forces teaching practices that are inconsistent with teachers' own educational practices and enriched activities.⁶² NCLB shapes what's taught in school, how it's taught, and in what language it is taught.⁶³ Teachers are given scripts for exact teaching—which turns teaching professionals into teaching technicians who follow predetermined and prescribed sets of rules.⁶⁴ Even worse, the legislation turns educators into cheaters. In 2015, for example, under extreme pressure to produce quick results, 178 teachers, principals, and district administrators in Atlanta school districts cheated by changing student answers on standardized tests to boost the scores.⁶⁵

Improving Test-Taking Skills Instead of Achievement

Increases in achievement scores have been negligible while the costs to creativity are significant, measurable, and dire. In fact, NCLB has neither improved students' learning, nor reduced the achievement gap, leaving disadvantaged students even farther behind.⁶⁶ If some students' scores have increased, the actual reason may be that their test-taking skills have increased rather than their learning;⁶⁷ or it is that the tests have been made much easier than before.⁶⁸ More recently, in December 2015, the new legislation replaced NCLB with the Every Student Succeeds Act (ESSA) in order to "fix" NCLB problems. However, ESSA still focuses on testing mandates, and it just shifted from the federal control to the state control with a lot of fuzzy states' responsibilities.⁶⁹ Focusing only on increasing students' test scores and test-taking skills (instead of on developing their full creative potential) turns students into human bonsai trees. Bonsai trees are ornamentally shaped trees that are artificially pruned and wired, preventing them from reaching their full size. Likewise, American children are now pruned and wired to be un-creative, preventing them from reaching their full potential. The strengths that helped make America great have been "bonsaied," and the current test-centric climate is causing long-lasting, detrimental effects.

AMERICA IN FIFTY YEARS?

Following the worst trend line in creativity fifty years into the future, I can imagine a news article in 2066 like this:

Creativity Lost: America Left Behind

Like many short-lived, media-driven fads, Americans became bored with the so-called Creativity Crisis that erupted in the early years of this century, and it quickly faded into the background of Americans' collective consciousness.

Unfortunately, pretending the Creativity Crisis didn't exist didn't make it go away, in fact, it only got worse. In retrospect, this should really be no surprise. Instead of focusing their energy on becoming innovators, Americans were happy to become consumers of excess—choosing the gratification that comes from short-term pleasures over the hard work and sweat required to attain long-term goals. Many children became dependent on social media like never before—searching smartphones and computer screens for answers instead of experimenting and trying things on their own.

American parents and educators colluded to make children mentally weaker and more dependent than ever before. Instead of challenging children to confront a problem and sort through options to address it, they required rote learning. This produced a workforce unprepared for new jobs in the fast-moving, dynamic business world. These jobs required creative-thinking skills, which were sadly lacking within the US workforce. So instead of hiring American workers, companies hired workers from Asia—young men and women who not only cost less to hire but also were better educated and more creative than the majority of Americans.

One of the new economic stars was China. The Chinese copied the creative climates, creative attitudes, and creative-thinking skills that had once made America great, while the Americans copied Asian education methods—to their downfall. As China's economy rose, the Chinese government became less primitive and corrupt. At the same time, Chinese people continued their obsessive pursuit of expertise with the important addition of creativity. Although Americans became good test takers, Asians became better innovators. Without innovation, America was no longer able to compete in the world arena.

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This glimpse of America's future doesn't have to happen. America has the power to recapture its innovation in the world. Each American can make a difference, starting right now.

AMERICA MOVING FORWARD

Creativity is declining; something must be done. The next chapter reveals the nature of creativity and presents the creative CATs (climates, attitudes, and thinking skills) to achieve innovation. They show three practical steps for cultivating creative climates, nurturing creative attitudes, and applying creative-thinking skills. Parents and educators can guide children to recapture the innovation that's being tested out of them.

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