

When Angela Belcher was a freshman at the College of Creative Studies at the University of California–Santa Barbara (UCSB), she scanned the college catalogue for the most interesting class she could find. It turned out to be a graduate course in protein chemistry.

But when Belcher tried to sign up, the professor said, “We don’t let undergraduates take this class, and besides, you don’t have the prerequisites.” The provost of her college called the professor and said, “We don’t discourage our students from pursuing what they’re interested in. Give her a chance.”

The professor relented, and today Belcher conducts research in the Biomolecular Materials Group at the Massachusetts Institute of Technology and is the recipient of a 2004 MacArthur Fellowship, a \$500,000 no-strings-attached “genius” grant awarded for “originality, creativity, and potential to do more in the future.”

“It was in that protein chemistry class that I really fell in love with large molecules and proteins and set the course for my research today,” Belcher says.

That kind of passion is what creative studies is all about. Bruce Tiffney, dean of the College of Creative Studies (CSS), says, “Creativity is not a discipline, but a state of mind. It’s an unwillingness to accept things as they seem, a willingness to question, to seek new patterns, to live on the margins of human knowledge rather than safe—and bored—at its center.”



Angela Belcher  
in her lab at MIT

# applied imagination

BY MOLLY ROSE TEUKE

## Divergent and convergent thinking are key to creative problem solving. In other words . . . **THINK BIG**

### Brainstorming 101

The contemporary spark of interest in creativity is attributed in part to Alex Osborn, who in 1948 published *Your Creative Power: How to Use Imagination*. “Our thinking mind is mainly two-fold,” he wrote. “One, a judicial mind which analyzes, compares and chooses. Two, a creative mind which visualizes, foresees, and generates ideas. Judgment keeps imagination on the track. Imagination not only opens ways to action, but also can enlighten judgment.”

In that postwar period of conformity, few educators were promoting creative thinking. In 1950, J. P. Guilford, president of the American Psychological Association, spoke of “education’s appalling neglect of creativity.” In his research he noted a distinction between convergent thinking, the common method of targeting a single, correct solution to a problem, and divergent thinking, the less common method of generating many possible solutions from which to choose.

At its core, Osborn wrote in his 1953 book, *Applied Imagination*, creative problem solving defers judgment on a right answer. Instead, the process evaluates many possible answers, seeking patterns and relationships that might suggest solutions we wouldn’t otherwise see. Often it begins with determining whether we’re even addressing the real problem or asking the right question.

Osborn wasn’t an academic, although he considered himself an educator. He was a partner in the New York advertising firm Batten, Barton, Durstine & Osborn (today the award-winning BBDO). There he coined the word brainstorming to describe the creative process he and his colleagues used to generate ideas. He helped launch the first college-level

course in creative thinking—for retailing students, taught by account executives from BBDO.

Corporate America continues to value Osborn’s notion of creativity. He believed creative thinking could and would change the world—and he’s being proved right.

It was researcher and academic Richard Florida who coined the term “the creative class” to describe no less than a revolution among today’s creative thinkers across all sectors and disciplines. “To understand how scientists, artists, entrepreneurs, venture capitalists, and other self-motivated, creative people are challenging the traditional structures of society, read Richard Florida’s *Rise of the Creative Class*,” says Lewis M. Branscomb of Harvard University’s Kennedy School of Government. “It will convince you that success in the future is not about technology, government, management, or even power; it is all about people and their dynamic and emergent patterns of relationships.”

### An Academic Approach

In the mid-1950s Osborn helped launch and taught in what grew to be the Creative Studies Department at Buffalo State College, which today offers a master’s degree in creative studies. UCSB launched its undergraduate College of Creative Studies in 1967. In 2005 Sage College of Albany began offering a Bachelor of Science degree in creative studies. Even so, “There are very, very few full-blown programs in creativity,” says Steve Dahlberg, principal of the International Centre for Creativity and Imagination in Willamantic, Connecticut; previously, he directed the Creative Education Foundation, based in Massachusetts and started by Osborn in 1954. “But

there are a lot of courses, and they’re having an impact. Students who take a course in creativity frequently talk about it as the best class they’ve ever taken. Seniors often say it should be required for freshmen.

“I think one of the reasons these classes don’t grow into formal programs is that people are having too much fun. They’re too engaged—it doesn’t look like a typical academic course. It’s an odd situation of balancing the fact that it has great impact but it doesn’t look like most of what else is happening in the university.”

Joette Field graduated from Buffalo State’s program in 1974 and exemplifies the kind of engagement Dahlberg is talking about. “My whole world opened up,” she says. “I finally understood what being in school was all about. I realized that learning could be fun, and I knew then that I had to become a teacher and help children learn how to learn in their own unique way.”

Today Field teaches in the Williamsville, New York, elementary school system—but not as a traditional classroom teacher. In 1993 she was asked to create a program in critical and creative thinking skills. Each year she and her counterparts in other Williamsville elementary schools work with hundreds of children in kindergarten through fourth grade. “Kids understand divergent thinking—many ideas, the wilder the better,” says Field. “And they get convergent thinking—evaluating those ideas using their own personal criteria, their filter, of what works for them.”

A central thread of Field’s classroom work is helping kids recognize and understand their learning styles. “Process skills—knowing how to learn and

Buffalo State’s light bulb logo suggests that creativity lights up the world



deal with knowledge—are more important than content when it comes to helping children unlock their potential,” she says.

She recalls a young boy who had been officially labeled learning disabled.

“I’d been harping on auditory, visual, and kinesthetic learning styles,” she says, explaining that kinesthetic learners learn best and concentrate better when movement is involved. These learners are apt to be labeled hyperactive.

Fields says, “This little guy went home and told his mother, ‘I’m not stupid! I’m kinesthetic!’ He was in fourth grade. Now he’s a senior, and he’s an honors student.”

### Creativity for Life

Gerard Puccio, chair of Buffalo State’s Creative Studies Department, says, “Creativity has given me a much greater tolerance for ambiguity. Whenever you start something new, there’s ambiguity. Creativity is about not getting flustered. It’s about saying ‘I don’t have the answer right now, but I’ll work it out.’ I see creativity as an essential life skill.”

It’s not hard to engage our own core creativity, says Steve Dahlberg, but it can feel awkward at first. Try folding your arms or interlacing your fingers. Chances are you do it a certain way, and if you do it the opposite way, it feels awkward. Do it anyway.

# “I SEE CREATIVITY as an essential life skill.”

When you eat breakfast, hold your fork in the unaccustomed hand. Dahlberg says that such simple alterations in everyday habits allow you to get comfortable with discomfort—and new ideas that spring from creative thinking often take us beyond our comfort zone.

“Part of it is simply paying attention and noticing whether you’re judging what you’re thinking or are remaining open to putting the pieces together in different ways,” he says. “I knew a toy inventor who sometimes wore his watch on the opposite wrist, just to have that uncomfortable feeling reminding him to be deliberate. It’s more work up front to live your life creatively, but ultimately the path is deeper, richer, and more rewarding.”

Much of Dahlberg’s consulting concerns approaching life transitions creatively, whether it’s graduation, a move, marriage, divorce, or retirement. “Transitions are a time to be more open, to explore what’s purposeful and meaningful to you,” he says. “If you’re reactive and shut down on things too quickly, you miss opportunities.

You’re likelier to make unexpected and beneficial connections if you’re able to consider ‘What if?’ and to see yourself and your circumstances in new contexts.”

One forum for exploring creative thinking in depth is the Creative Education Foundation’s Creative Problem Solving Institute (CPSI), launched by Alex Osborn in 1955. Open to everyone and described as “a watering hole for creative thinkers,” CPSI offers opportunities to exercise practical creativity skills while drawing inspiration from some of the world’s most engaging proponents of creativity. In 2006 the annual CPSI gathering in Chicago drew close to 1,000 participants from more than two dozen countries.

## Creativity in the World

Since its inception in 1967, UCSB’s College of Creative Studies has graduated more than 1,700 creative thinkers. Where do graduates with a creative studies degree land? “Like the 800-pound gorilla,” says Tiffney, “wherever

they want.” That, says UCSB alumna Christina Belanger, is because when CCS students go out into the world, they don’t just have a degree that says they’re qualified to do something—they’ve already started doing it.

Belanger, now a graduate student in the paleobiology program in the University of Chicago’s Department of Geophysical Sciences, says it was a stretch for her to enroll in creative studies. “It’s a quirky college that does not have a set curriculum and does not give out grades,” she says. “But CCS removes the confining boxes other students are asked to work within. By allowing us to design an education that straddles the boundaries normally erected by the departmentalization of the university, CCS opens up opportunities for the creative synthesis of ideas across fields that those who confine themselves to a single area will not see as clearly. It changed the way I approach not just my graduate education, but also other life situations. I don’t think about the rules and perceived boundaries. I think about what my goals are and set about to gather the tools to achieve them, however eclectic that process might be.”

In a 2003 commencement address to the college, Angela Belcher said, “When I finished my post-doc, I wanted to combine everything I had learned up to that point, so I wrote a grant proposal to genetically engineer protein-based viruses to grow and assemble electronic materials to form next-next-generation electronic computers. Two reviews came back. One said, ‘Great idea, very creative, probably very challenging, but she can probably do it.’ The second came back: ‘Is she crazy?’”

“Fortunately, the grant officer gave me a chance, and that seemingly crazy idea has led to millions of additional dollars in grant funding, 11 patents, numerous papers, over 20 Ph.D. student projects, my own company, a faculty position at MIT, and 500,000 frequent-flier miles.”

*Freelance writer Molly Rose Teuke lives and works in Madison, Wisconsin.*

## FOR MORE INFORMATION

### Buffalo State University

Creative Studies  
Department  
[www.buffalostate.edu/centers/creativity](http://www.buffalostate.edu/centers/creativity)

**Creative Education  
Foundation**  
[www.creativeeducationfoundation.org](http://www.creativeeducationfoundation.org)

### University of California– Santa Barbara

[www.ccs.ucsb.edu](http://www.ccs.ucsb.edu)

**Creative Problem  
Solving Institute**  
[www.cpsiconference.com](http://www.cpsiconference.com)

### Sage College of Albany

Bachelor of Science  
in Creative Studies  
[www.sage.edu](http://www.sage.edu)

**International Forum  
of Creativity  
Organizations**  
[www.ifoco.org](http://www.ifoco.org)

## 7 EXERCISES TO STIMULATE your creativity

- 1 **List 10 alternative uses for an everyday item**  
—a brick, a pen, a roll of tape
- 2 **Take a new route the next five times you set out for a familiar destination**  
—the grocery store, work, a friend’s house
- 3 **Pick a word at random from the dictionary** and think of all the ways it might relate to a problem you’re trying to solve.
- 4 **Doodle**—not just with your dominant hand, but with the opposite hand, too.
- 5 **Explore connections between seemingly unrelated things**  
—for instance, how is a summer storm like resolving an argument with a colleague?
- 6 **Routinely ask: What if? What else? Why not?**
- 7 **Make up your own impromptu word games.**

Source: Steve Dahlberg, principal, International Centre for Creativity and Imagination