

SCIENTIFIC AMERICAN

# MIND

BEHAVIOR • BRAIN SCIENCE • INSIGHTS

June/July 2008

www.SciAmMind.com

Don't  
Forget  
Keys to  
Memory  
page 48

# The Creative Mind

## How to release your inner genius

**Avoid  
Mental  
Clutter**

The Brain's  
Spam Filter

**Bisexual  
Animals**

What They  
Reveal about Us

**Origins of  
Consciousness**

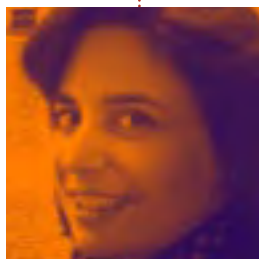
Clues from  
Split Brains

**PLUS:**  
**Scratch  
This**  
The Science  
of Itching

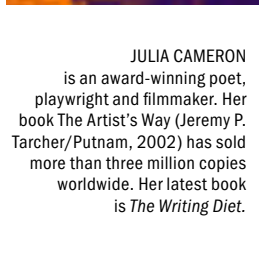


\$5.95 U.S.

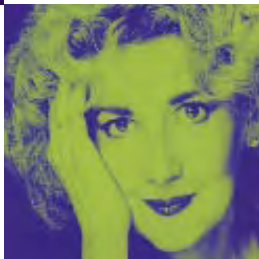
# Let Your Creativity Soar



**MARIETTE DICHRISTINA** is executive editor of *Scientific American Mind* and *Scientific American*. She has been a journalist for more than 20 years.



**JULIA CAMERON** is an award-winning poet, playwright and filmmaker. Her book *The Artist's Way* (Jeremy P. Tarcher/Putnam, 2002) has sold more than three million copies worldwide. Her latest book is *The Writing Diet*.



**JOHN HOUTZ** is a psychologist and professor at Fordham University. His most recent book is *The Educational Psychology of Creativity* (Hampton Press, 2002).



**ROBERT EPSTEIN** is a visiting scholar at the University of California, San Diego. Contributing editor for *Scientific American Mind* and former editor in chief of *Psychology Today*, Epstein has written several books on creativity, including *The Big Book of Creativity Games* (McGraw-Hill, 2000).



IN A DISCUSSION WITH *SCIENTIFIC AMERICAN MIND* EXECUTIVE EDITOR MARIETTE DICHRISTINA, THREE NOTED EXPERTS ON CREATIVITY, EACH WITH A VERY DIFFERENT PERSPECTIVE AND BACKGROUND, REVEAL POWERFUL WAYS TO UNLEASH YOUR CREATIVE SELF

**MARIETTE DICHRISTINA:** Let's start by talking about what has drawn each of you to the study of creativity. What's so fascinating about it?

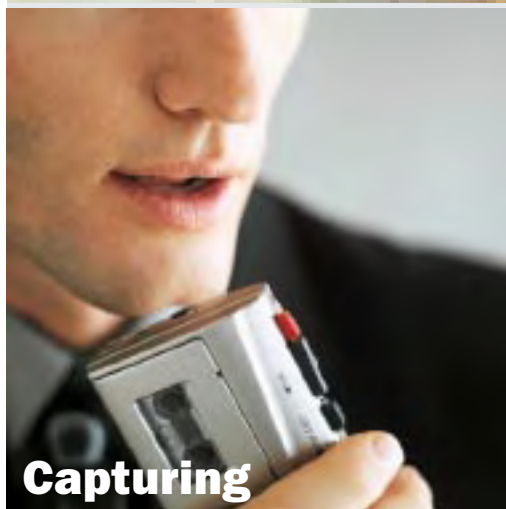
**JOHN HOUTZ:** There's so much power in a new idea taking shape and changing the way people live and act. Often the rest of us are in awe, or we are even afraid of a new idea, and sometimes our fears spur us to learn more about it. In addition to what some academics call Big Creativity or "Big C"—profound ideas that sometimes change the world—there is what we call the "little c" type of creativity: the everyday problem solving that we all do. The bottom line is that we'd all like to be more creative. We'd all like to be able to solve our problems in a better way. We don't like being frustrated. We don't like having obstacles in our path.

**JULIA CAMERON:** What drew me to working on my creativity was running into a couple of bumps. I had had a blessed decade in my 20s, and then when I got to my 30s I felt thwarted. I was writing movies and selling them to studios, but they weren't getting made. I needed to find a way to maintain equilibrium and optimism in the face of creative despair. I fought my despair with what I call "morning pages"—three pages of longhand writing about anything: "I don't like the way Fred talked to me at the office"; "I need to get the car checked"; "I forgot to buy kitty litter." They don't look like they have anything to do with creativity, but in fact, as we put these worries, which are sort of a daily soundtrack for most of us,

COURTESY OF MARIETTE DICHRISTINA (DiChristina); TKTK (Cameron); TKTK (Houtz); COURTESY OF ROBERT EPSTEIN (Epstein)

## AWAKENING

According to Epstein, there are four “core competencies” of creative expression. People need to learn to preserve their new ideas (Capturing), surround themselves with interesting people and things (Surrounding), tackle tough problems (Challenging), and expand their knowledge (Broadening).



## Surrounding



down on the page, we are suddenly much more alert, aware, focused and available to the moment. And we begin to see that we have many creative choices. As I wrote those pages, new ideas began to walk in. Over time, I began to share the morning-pages technique with other people.

**ROBERT EPSTEIN:** My interest in creativity started in a peculiar way—while I was working with pigeons at Harvard in the 1970s. I was intrigued by the fact that they always did things I hadn’t taught them, and I wanted to know where the new behavior was coming from. I began teaching them different things systematically and then placing them in new situations and watching new behavior emerge. There was an orderly relation between what I had taught and the new be-

havior, and eventually I discovered principles or laws that allowed me to predict the new behavior, literally moment to moment. Eventually I began similar research with children, and then with adult humans, and found that those laws, somewhat tweaked, were still helpful. I came to believe that the creative process in individuals is orderly and predictable every moment in time. At some point I developed tests to see whether people have the competencies they need for expressing creativity, and then I developed games and exercises to boost creativity. I think that the fact that creativity is orderly is good news, because it means we can all tap into this rich potential we all have.

**CAMERON:** I, too, have found the creative process to be teachable and trackable. I teach people three simple tools, and anyone using those tools has what might be called an awakening. They become much more alert; they become much more friendly in interacting with people—much less threatened by change.

**HOUTZ:** I think that some of the techniques Julia teaches are similar to the competencies Robert has uncovered. Perhaps, Robert, you might explain what those competencies are.

**EPSTEIN:** There are four different skill sets, or competencies, that I’ve found are essential for creative expression. The first and most important competency is “capturing”—preserving new ideas as they occur to you and doing so without judging them. Your morning pages, Ju-

### FAST FACTS

#### Unleashing Creativity

- 1>> Creativity is not a gift from the muses only granted to certain people. Rather it is something that anyone can cultivate, using a variety of methods.
- 2>> The experts in the panel discussion offer simple ways to stimulate and capture new ideas—while countering negative thoughts and habits that block novel thinking.
- 3>> The lessons apply not only to adults: encouraging open-ended problem solving can help foster creativity in children as well.

## Challenging



## Broadening

lia, are a perfect example of a capturing technique. There are many ways to capture new ideas. Otto Loewi won a Nobel Prize for work based on an idea about cell biology that he almost failed to capture. He had the idea in his sleep, woke up and scribbled the idea on a pad but found the next morning that he couldn't read his notes or remember the idea. When the idea turned up in his dreams the following night, he used a better capturing technique: he put on his pants and went straight to his lab!

The second competency is called “challenging”—giving ourselves tough problems to solve. In tough situations, multiple behaviors compete with one another, and their interconnections create new behaviors and ideas. The third area is “broadening.” The more diverse your knowledge, the more interesting the interconnections—so you can boost your creativity simply by learning interesting new things. And the last competency is “surrounding,” which has to do with how you manage your physical and social environments. The more interesting and diverse the things and the people around you, the more interesting your own ideas become.

**CAMERON:** I've mentioned the morning pages, which sounds like your capturing, and the second technique I teach everybody—the artist “date” or “outing,” I call it—is to take an adventure once a week, which probably involves both broadening and challenging. The third tool is to walk out the door for 20 minutes or so and see what happens to your thinking. When people walk, they often begin to integrate the insights

and intuitions that they have had through morning pages and outings.

**HOUTZ:** I think if we want everyone to have a way to be more creative, we have to convey the message that they have to work at it; creativity isn't necessarily going to come naturally. And what strikes me about Julia is her high productivity. Creative people are productive. They may have lots of ideas that don't work, but the point is that they have lots of ideas. So if people want to be more creative—and to be effective problem solvers—they're going to have to be disciplined like Julia is.

**DICHRISTINA:** I was talking with a couple of attorneys about creativity, and one of them said, “Well, some people just have more than others, don't they?” Could we talk about why so few people express creativity?

**EPSTEIN:** When children are very young, they all express creativity, but by the end of the first grade, very few do so. This is because of socialization. They learn in school to stay on task and to stop daydreaming and asking silly questions. As a result, the expression of new ideas is largely shut down. We end up leaving creative expression to the misfits—the people who can't be socialized. It's a tragedy.

**CAMERON:** I sometimes ask people to list 10 traits they think artists have. They say things like “artists are broke,” “artists are crazy,” “artists are drug-addicted” and “artists are drunk.” Doesn't

**THEY  
HAVE TO  
WORK AT IT;  
CREATIVITY  
ISN'T NEC-  
ESSARILY  
GOING  
TO COME  
NATURALLY.**

## THWART

Creativity is shut down in most people by early socialization, leaving it to “misfits,” according to the panelists. But everyone has roughly equal potential to express creativity, given the right skills.



Early Socialization

## Negative Attitudes



this make you want to rush right out and become an artist? We have a mythology in America around creativity that's very, very negative. As a result, when young people tell their parents, “I'd love to be a writer,” their parents respond, “Oh, darling, don't you think you might need something to fall back on?” We're also trained to believe that some people are born knowing they're artists and that they are the “real” artists, the ones who give us the Big C creativity. In other words, we have a mythology about artistry that tends to be very daunting.

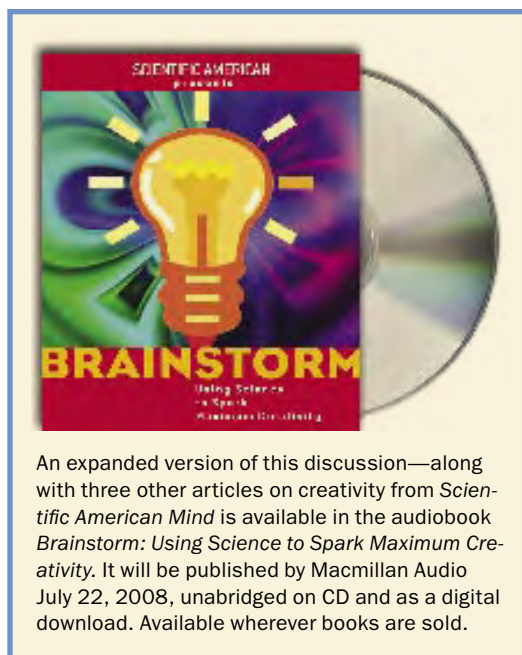
**HOUTZ:** I think that comes from some of the studies of Big C creativity. When we look at individuals who have had a tremendous impact on

some field, for whatever reason, they often turn out to be unstable or living a wild life—the misfits, as Robert said. That's very unfortunate. But there also are real obstacles for creative people. Julia, you mentioned that many of your creative projects were failing at one point. People who want to be more creative have to realize that many new ideas will at first meet great obstacles. When Robert talked about “challenge,” you could read that word “challenge” in two ways. You need to challenge yourself, that's true, but you also have to realize that the world out there—society, the audience for your new idea—will perhaps need a lot of time to get used to it and may initially not want to reward you. It's important not to become discouraged. You have to keep at it!

**CAMERON:** When I first gave the manuscript for *The Artist's Way* to my literary agent at William Morris, she said, “Oh, Julia, *no one* is going to be interested in this.” So Mark Bryan and I self-published the book by photocopying it at a little Communist bookstore and selling a few copies at a time. Emma Lively and I have been working for eight years on a musical that is only now getting its lucky break.

You have to put up with dry spells and keep creating in the face of them.

**EPSTEIN:** When I do seminars on creativity, I teach stress-management techniques to help people cope with the rejection that goes hand in hand with creativity. You have to learn not to fear failure and even to rejoice in it. When I'm failing, I say to myself, “I'm in good company. I'm in the company of some of the most creative and productive people in the world.”



An expanded version of this discussion—along with three other articles on creativity from *Scientific American Mind* is available in the audiobook *Brainstorm: Using Science to Spark Maximum Creativity*. It will be published by Macmillan Audio July 22, 2008, unabridged on CD and as a digital download. Available wherever books are sold.



**HOUTZ:** The creative individual thinks of failure as a new opportunity: “Okay, why did I fail? What was wrong? Let me try to do something else. Let me go forward with it.”

**EPSTEIN:** In the laboratory, failure also produces a phenomenon called resurgence—the emergence of behaviors that used to be effective in that situation—that leads to a competition among behaviors and to new interconnections. In other words, failure actually stimulates creativity directly. It really is valuable.

**CAMERON:** You also need to be able to take criticism. When I write a novel, I send it to about 10 people whom I consider very trusted readers. They come back to me with their criticisms, and I write another draft. Sometimes I write as many as seven drafts of a work before it goes forward into the world.

**HOUTZ:** There’s also a stereotype that creativity is just involved in the generation of ideas. But after the ideas are generated, you then have to evaluate them, sift through them, embellish them, repair them, revise them and get them tested, which all means that the creative process is actually quite complex.

**EPSTEIN:** But you’ve got to capture now and evaluate later. A big mistake people make is to start visualizing the criticism or the feedback while they’re still generating. That can shut you right down.

**CAMERON:** Morning pages allow you to bypass the censor, because there’s no wrong way to do the pages. You just keep writing. They allow you to take risks freely with your ideas.

**DICHRISTINA:** There’s another dynamic here, too, John, which I’m hoping you can speak to: the group dynamic of creativity. People often play different roles in the creative process, don’t they?

**HOUTZ:** A key factor here is personality, which has been researched extensively. Some personality characteristics seem to close off the expression of new ideas. Other personality characteristics encourage that expression.

**EPSTEIN:** I’ve found that no matter what their personality, people can learn skills that boost creative output. I also doubt that there’s any real difference between the little c and the Big C types of creativity. If you write enough morning pages, now and then some Big C items have a chance of creeping into the little c list—no matter what your personality.

**HOUTZ:** We may all have the same potential or at least the potential to be better, but if we know about our strengths and weaknesses, then we can better capitalize on our strengths, and we also know what we need to work on.

**EPSTEIN:** No question about that. Getting back to Mariette’s question about groups, let me give you an example of an exercise I do with people that boosts group creativity. It’s called “the shifting game.” In this exercise, half of my teams stay together for 15 minutes to generate names for a new cola. The other teams work together for five minutes, then shift out of the group to work on the problem individually, then come together for the last five minutes. Even with all the moving around, the shifting teams produce twice as many ideas as the nonshifting ones. This happens, I think, because groups inhibit a lot of creative expression. Dominant people tend to do most of the talking, for one thing. But when people shift, everyone ends up working on the problem.

## THE CREATIVE INDIVIDUAL THINKS OF FAILURE AS A NEW OPPORTUNITY.

## Work through Criticism



# THERE IS NO REASON WHY WE CAN'T DEVELOP MORE CREATIVE PROBLEM SOLVERS FROM NURSERY SCHOOL ON UP.

**DICHRISTINA:** Don't many people believe they're not creative at all? What can you do about that?

**EPSTEIN:** Sometimes that's a permission issue. Many of us feel like we need permission to be creative, maybe because of a teacher who shut us down when we were young—like my eighth grade English teacher! One thing I like to do with people is to give them permission to have a daydream. We all just close our eyes and daydream together. It can be quite a liberating experience. Virtually everyone has amazing daydreams and dreams, and those can be used to boost creative output. In fact, when you really start letting yourself go, you can end up with *too many* ideas. Your own output can overwhelm you, and you can get stuck!

**HOUTZ:** What might be some tools to help people that have the problem Robert just described?

**CAMERON:** I have a tool that's called "blasting through blocks." It's very simply sitting down with a piece of paper and writing down all of your angers and fears related to finishing a project. Sometimes they're very petty: I'm afraid I'll finish it, and no one will think it's any good; I'm afraid I'll finish it, and I won't think it's any good; I'm afraid I'll finish it, and it will be good, but no one will recognize that. Just getting those reservations on a sheet of paper and maybe sharing them with someone can give you the freedom to go back to work on the project.

**DICHRISTINA:** How about the idea of taking breaks to promote creativity? There's the old adage about sleeping on something. Isn't a lot of

creativity about being mindful of those times and paying attention?

**EPSTEIN:** Absolutely, but you can also be strategic about how you're going to use those breaks. Salvador Dalí made deliberate use of his naps to get ideas for his art, for example. While relaxing on a sofa, he'd hold a spoon out over the edge and place a plate on the floor beneath the spoon. Just as he'd drift off to sleep, his hand would relax and the spoon would fall. The sound of the spoon hitting the plate would awaken him, at which point he'd grab a pad and sketch out interesting images he might have seen in the semisleep state. Thomas Edison used a similar technique to get ideas for his inventions. And the good news here is that we all experience this state—the so-called hypnagogic state. Think about how deliberate Dalí and Edison were or about how deliberate Julia's techniques are. You don't need to leave creativity to chance.

**DICHRISTINA:** I think many people make the mistake of believing that there's just no time to be creative, even to do something simple like paying attention to your thoughts and capturing them.

**EPSTEIN:** Well, high tech is making this easier, fortunately. These days all you have to do to capture an idea is to pick up your PDA or memo recorder or even just to leave a message for yourself on your voice mail. You can even capture new melodies that way.

**HOUTZ:** This is where one's style or various personality traits might come into play. If I'm an in-

GETTY IMAGES (left); MANFRED BAUMANN age fotostock (right)



## Take Breaks

## BOOST

To boost your creative output, think and behave like creative people do: don't let criticism stop you from expressing your ideas and learn not to fear failure. Take breaks and learn to use them strategically; use daydreams as sources of new ideas.

ternal person, I might enjoy the reflectivity and the quiet time and the incubation time. If I'm an external person, I might take my strength from interactions with others in a dynamic group that's giving and taking and making lots of noise.

**DICHRISTINA:** How about fostering creativity and maintaining it in children? What tips do you have for educators and parents?

**EPSTEIN:** Well, all four of the basic creativity competencies can be taught to children. But when I've suggested to teachers that they set aside a few minutes each week for creativity training, these days they tell me that's impossible. This is an area where I see our society moving in the wrong direction—toward an obsession with raising scores on standardized tests.

**CAMERON:** I think that creativity is contagious and that the best thing we can do for children is to model for them what it's like to be a creative individual.

**HOUTZ:** There is no legitimate reason why we can't develop more creative problem solvers from nursery school on up. There are many techniques that could be introduced into the curriculum alongside the content domains. But, as Robert said, the emphasis right now is more political than educational.

**DICHRISTINA:** How might we be able to challenge our children in small ways so that we're at least keeping creativity alive at home?

**EPSTEIN:** One thing I like to do is make all problems open-ended. Never say, give me three ideas for this; always say, give me *at least* three. When tasks are open-ended, a lot more ideas are generated. I also like to use what I call "ultimate" problems with kids. Those are problems that have no real solutions. Children have great fun with problems like those. Ask them questions like "How could you get a dog to fly?" or "How could you make the sky a different color?" You can also supply your kids with idea boxes and folders—special places for putting drawings and poems and scraps of anything new. That encourages capturing on an ongoing basis and tells children that their new ideas have value.

**HOUTZ:** It's also important to give children permission to make decisions rather than always making decisions for them.

**DICHRISTINA:** When my children have a question that I might be able to answer, I sometimes instead say, "Why don't we find out?" Then I guide them through a process of discovering the answer for themselves. They sometimes find amazing ways to get there. Are we leaving anything out?

**EPSTEIN:** Maybe just that there's something both humbling and exhilarating about generating a new idea. I'm looking at Julia Cameron's eyes right now, trying to imagine the extraordinary things she's put on paper that have never been seen before by anyone in human history. I believe everyone has that kind of potential. Imagine that. **M**

## Test Your Creative Competencies

To get a quick fix on your creativity competencies, take the Epstein Creativity Competencies Inventory at <http://MyCreativitySkills.com>

If you are a manager or teacher, see if you have the skills you need to stimulate creativity in other people at <http://MyCreativitySkills.com/managers>