

Unknown Title

Ingrid Wickelgren :: 10/18/2012



This article was published in Scientific American's former blog network and reflects the views of the author, not necessarily those of Scientific American

The November/December *Scientific American Mind*, which debuted online today, examines the origins of genius, a concept that inspires both awe and confusion. Some equate genius with IQ or creativity; others see it as extraordinary accomplishment. As this issue reveals, genius seems to arise from a mosaic of forces that coalesce into a perfect storm of eminence. Innate ability, personality, circumstances and an unusual level of motivation all play a role. This issue identifies key elements behind the turbulence that leads to genius from the fields of psychology, education, art and neuroscience.

Exploring Dead Ends

People attach the label “genius” to such diverse characters as Leonardo DaVinci, Bobby Fischer and Toni Morrison. The varied achievements of such individuals beg the question: what defines a genius? People have long-equated genius with intelligence, but it is more aptly characterized by creative productivity. Such exceptional output depends on a combination of genetics, opportunity and effort. Nobody can be called out for outstanding contributions to a field without a lot of hard work, but progress is faster if you are born with the right skills. Personality also plays a role. If you are very open to new experiences and if you have psychopathic traits (yes, as in those shared by serial killers) such as being aggressive and emotionally tough, you are more likely to be considered a genius (see [“The Science of Genius,”](#) by Dean Keith Simonton).

To make the contributions for which they are known, all geniuses depend on the same general process, Simonton theorizes. It starts with an unrestrained search for ideas without foresight into their utility. This hunt takes a creator down many dead-end roads, causing him or her to backtrack and start over. This trial-and-error process eventually leads a solution that works. For anyone who has engaged in a project for which progress is hard to measure or that seems to stall or meander, this theory is heartening. When a problem or endeavor is difficult, we should probably not expect our research to proceed in a linear fashion. The many seemingly wasted hours exploring roads that lead nowhere may really be necessary to find an effective and innovative solution.

Trivial Pursuits

Of course, not everyone is equally equipped to come up with such solutions. True creativity and genius depends on an unfiltered view of the world, one that is unconstrained by preconceptions and more open to novelty. In particular, a less conceptual and more literal way of thinking, one more typical of people with autism, can open the mind up to seeing details that most people miss. People with a more open mindset see visual elements in ways that enable them to create strikingly realistic drawings. One boy gained impressive mechanical skills from a brain injury that gave him an unusual eye for the parts of things.

This theory of creativity as a bottom-up process—that is an ability to see the parts rather than just the whole—has inspired the radical idea of a creativity cap, a device placed on the head that can temporarily produce that type of thinking. The cap, in effect, circumvents mental blocks to our creativity, enabling the genius within. Using transcranial direct current stimulation, this device works not by enhancing part of the brain, but by temporarily turning part of it off. It silences the part of the brain that imposes schemas on the world and weaves observations into high-level concepts, providing a less filtered view of the world. In experiments, the technique has improved people’s visual memory and insight for solving problems (see [“Boost Creativity With Electric Brain Stimulation,”](#) by Allyn W. Snyder, Sophie ellwood and Richard P. Chi).

The Making of a Genius

Any effort to expand the pool of geniuses in our society, however, might need to rely less on an electrical cap than on an excellent education. Our schools devote scant resources on nurturing nascent genius, focused as they are on helping those students most likely to be left behind. School-based gifted education receives little state or federal funding. Only four states currently mandate services for gifted students and fully fund those mandates. The failure to develop the talents of our children deprives all of us of a stable of future innovators, creative thinkers, leaders and outstanding performers.

This failure has consequences. America ranked 31st of the 56 countries that participated in the Program for International Student Assessment (PISA) study, which assesses the academic skills and knowledge of 15-year-olds.

In this issue, three experts in education argue for a renewed commitment to excellence. First of all, we need to train teachers to spot giftedness, which may take a variety of forms and often needs to be accompanied by creativity, drive and passion. Offering a greater variety of enrichment activities to children will cause many more hidden talents to surface. And accelerated classes and psychological coaching are essential for

nurturing talent as early and vigorously as possible (see [“To Nurture Genius, Improve Gifted Education,”](#) by Rena F. Subotnik, Paula Olszewski-Kubilius and Frank C. Worrell).

In this issue, please also look out for my Q & A with the insightful and entertaining behavioral economist Dan Ariely, who divulges the nature of evil genius (see [“Unveiling the Real Evil Genius,”](#) by Ingrid Wickelgren). Hint: It has to do less with plots to take over the universe than with a dubious knack for rationalizing small, but dangerous, ethical lapses. A podcast of this interview is forthcoming.