

A NEW THEORY SUGGESTS THAT
CREATIVITY COMES IN TWO DISTINCT
TYPES – QUICK AND DRAMATIC,
OR CAREFUL AND QUIET.
WHAT KIND OF GENIUS ARE YOU?

BY DANIEL H. PINK | PHOTOGRAPHS BY DARREN BRAUN



In the fall of 1972, when David Galenson was a senior economics major at Harvard, he took what he describes as a "gut" course in 17th-century Dutch art. On the first day of class, the professor displayed a stunning image of a Renaissance Madonna and child. ¶ "Pablo Picasso did this copy of a Raphael drawing when he was 17 years old," the professor told the students. "What have you people done lately?" ¶ It's a question we all ask ourselves. What have we done lately? It rattles us each birthday. It surfaces whenever an upstart twentysomething pens a game-changing novel or a 30-year-old tech entrepreneur becomes a billionaire. ¶ The question nagged at Galenson for years. In graduate school, he watched brash colleagues write dissertations that earned them quick acclaim and instant tenure, while he sat in the library meticulously tabulating 17th- and 18th-century indentured-servitude records. He eventually found a spot on the University of Chicago's Nobel-studded economics faculty, but not as a big-name theorist. He was a colonial economic historian – a utility infielder on a team of Hall of Famers.

Now, however, Galenson might have done something at last, something that could provide hope for legions of late bloomers everywhere. Beavering away in his sunny second-floor office on campus, he has scoured the records of art auctions, counted entries in poetry anthologies, tallied images in art history textbooks - and then sliced and diced the numbers with his econometric ginsu knife. Applying the fiercely analytic, quantitative tools of modern economics, he has reverse engineered ingenuity to reveal the source code of the creative mind.

What he has found is that genius - whether in art or architecture or even business - is not the sole province of 17-year-old Picassos and 22-year-old Andreessens. Instead, it comes in two very different forms, embodied by two very different types of people. "Conceptual innovators," as Galenson calls them, make bold, dramatic leaps in their disciplines. They do their breakthrough work when they are young. Think Edvard Munch, Herman Melville, and Orson Welles. They make the rest of us feel like also-rans.

Then there's a second character type, someone who's just as significant but trudging by comparison. Galenson calls this group "experimental innovators." Geniuses like Auguste Rodin, Mark Twain, and Alfred Hitchcock proceed by a lifetime of trial and error and thus do their important work much later in their careers. Galenson maintains that this duality - conceptualists are from Mars, experimentalists are from Venus - is the core of the creative process. And it applies to virtually every field of intellectual endeavor, from painters and poets to economists.

After a decade of number crunching, Galenson, at the not-so-tender age of 55, has fashioned something audacious and controversial: a unified field theory of creativity. Not bad for a middle-aged guy. What have you done lately?

GALENSON'S QUEST TO UNLOCK THE SECRET OF innovation began almost by accident. In the spring of 1997, he decided to buy a painting, a small gouache by the American artist Sol LeWitt. But before he put down his money, he called a friend in the art world, who told him

that the price was too high. We're selling that size for less, she said.

"I thought, this is like carpet," Galenson tells me one afternoon in his office. Size determines price? His friend hadn't even seen the painting. What about when the piece was created, what stage it represented in the artist's career? His friend said that didn't matter. "I thought, it has to matter."

Galenson was right, of course. Art isn't carpet. And age does matter. The relationship between age and other economic variables was at the foundation of Galenson's academic work. His first book examined the relationship of age to productivity among indentured servants in colonial America. His second book looked at the relationship of age to the price of slaves. "It was the same regression," Galenson says, still amazed years after the discovery. "A hedonic wage regression!"

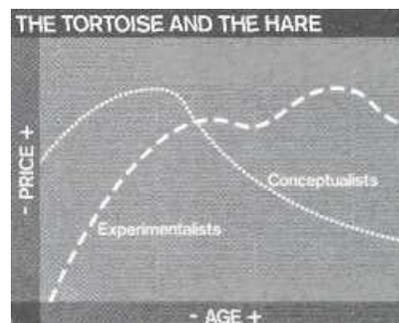
So he bought the painting and set out to answer questions about art the way any LeWitt-loving economist would. Galenson collected data, ran the numbers, and drew conclusions.

He selected 42 contemporary American artists and researched the auction prices for their works. Then, controlling for size, materials, and other variables, he plotted the relationship between each artist's age and the value of his or her paintings. On the vertical axis, he put the price each painting fetched at auction; on the horizontal axis, he noted the age at which the artist created the work. When he tacked all 42 charts to his office wall, he saw two distinct shapes.

For some artists, the curve hit an early peak followed by a gradual decline. People in this group created their most valuable works in their youth - Andy Warhol at 33, Frank Stella at 24, Jasper Johns at 27. Nothing they made later ever reached those prices.

For others, the curve was more of a steady rise with a peak near the end. Artists in this group produced their most valuable pieces later in their careers - Willem de Kooning at 43, Mark Rothko at 54, Robert Motherwell at 72. But their early work wasn't worth much.

Galenson decided to test the robustness of his conclusions about artists' life cycles by looking at variables other than price. Art history textbooks presumably reflect the consensus among scholars about which works are important. So he and his research assistants gathered up textbooks and



When Galenson plotted the average auction price of an artist's work against age, two distinct patterns emerged. Conceptualists did their breakthrough work early in life and then declined steadily. Experimental innovators, on the other hand, plodded along, peaking late in their careers.



David Galenson in front of Georges Seurat's *Sunday on La Grande Jatte* at the Art Institute of Chicago. A classic conceptualist, Seurat reinvented painting at the age of 25.

began tabulating the illustrations as a way of inferring importance. (The methodology is analogous to Google's PageRank system: The more books that "linked" to a particular piece of art, the more important it was assumed to be.)

When Galenson's team correlated the frequency of an image with the age at which the artist created it, the same two contrasting graphs reappeared. Some artists were represented by dozens of pieces created in their twenties and thirties but relatively few thereafter. For other artists, the reverse was true.

Galenson, a classic library rat, began reading biographies of the artists and accounts by art critics to add some qualitative meat to these quantitative bones. And then the theory came alive. These two patterns represented two types of artists - indeed, two types of humans.

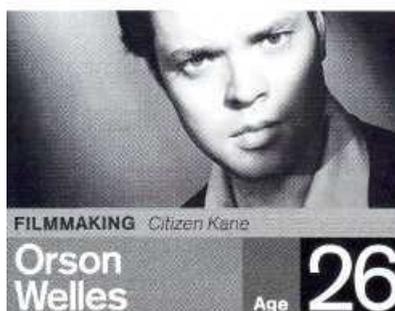
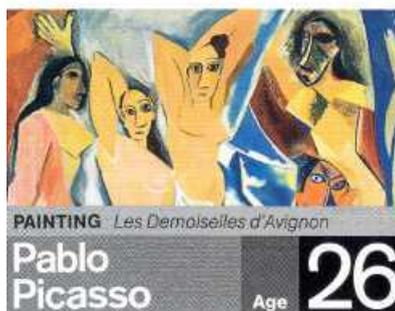
The insight was so powerful that Galenson soon turned his full attention to the subject. He elaborated his theory in 24 additional papers and set down his findings in a pair of books, *Painting Outside the Lines: Patterns of Creativity in Modern Art*, published in 2001, and *Old Masters and Young Geniuses: The Two Life Cycles of Artistic Creativity*, published earlier this year.

Pablo Picasso and Paul Cezanne are the archetypes of the Galensonian universe. Picasso was a conceptual innovator. He broke with the past to invent a revolutionary style, Cubism, that jolted art in a new direction. His *Demoiselles d'Avignon*, regarded by critics as the most important painting of the past 100 years, appears in more art history textbooks than any other 20th-century piece. Picasso completed *Demoiselles* when he was 26. He lived into his nineties and produced many other well-known works, of course, but Galenson's analysis shows that of all the Picassos that appear in textbooks, nearly 40 percent are those he completed before he turned 30.

Cezanne was an experimental innovator. He progressed in fits and starts. Working endlessly to perfect his technique, he moved slowly toward a goal that he never fully understood. As a result, he bloomed late. The highest-priced Cézannes are paintings he made in the year he died, at age 67. Cezanne is well represented in art history textbooks; he's the third-most-illustrated French artist of the 20th century. But of

CONCEPTUALISTS

Many geniuses peak early, creating their masterwork at a tender age ...



all his reproduced images, just 2 percent are from his twenties. Sixty percent were completed after he turned 50, and he painted more than one-third during his sixties.

Picasso and Cezanne represent radically different approaches to creation. Picasso thought through his works carefully before he put brush to paper. Like most conceptualists, he figured out in advance what he was trying to create. The underlying idea was what mattered; the rest was mere execution. The hallmark of conceptualists is certainty. They know what they want. And they know when they've created it. Cezanne was different. He rarely pre-conceived a work. He figured out what he was painting by actually painting it. "Picasso signed virtually everything he ever did immediately," Galenson says. "Cezanne signed less than 10 percent."

Experimentalists never know when their work is finished. As one critic wrote of Cezanne, the realization of his goal "was an asymptote toward which he was forever approaching without ever quite reaching."

Galenson later applied his methodology to poetry. He counted the poems that appear in major anthologies and recorded the age at which the poet wrote each entry. Once again, conceptual poets like T. S. Eliot, Ezra Pound, and Sylvia Plath, each of whom made sudden breaks from convention and emphasized abstract ideas over visual observations, were early achievers. Eliot wrote "The Love Song of J. Alfred Prufrock" at 23 and "The Wasteland" at 34. Pound published five volumes of poetry before he turned 30. On the other hand, experimental poets like Wallace Stevens, Robert Frost, and William Carlos Williams, whose work is grounded in concrete images and everyday language, took years to mature. For example, both Pound and Frost lived into their eighties. But by the time Pound turned 40, he had essentially exhausted his creative output. Of his anthologized poems, 85 percent are from his twenties and thirties. By comparison, Frost got a late start. He has more poems in anthologies than any other American poet, but he wrote 92 percent of

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them after his 40th birthday.

On and on it goes. Conceptualist F. Scott Fitzgerald wrote *The Great Gatsby* - light on character development, heavy on symbolism - when he was 29. Experimentalist Mark Twain frobbed around with different writing styles and formats and wrote *The Adventures of Huckleberry Finn* at 50. Conceptualist Maya Lin redefined our notion of national monuments while still a college student; experimentalist Frank Lloyd Wright created Fallingwater when he was 70.

The theory even applies to economists. Over lunch at the University of Chicago's faculty club, Galenson tells me the story of Paul Samuelson, one of the most renowned economists of the last century. No shrinking violet, Samuelson titled his dissertation "Foundations of Economic Analysis." As a 25-year-old, he sought to reinvent the entire field - and later won a Nobel Prize for ideas he came up with as a grad student. Swift, deductive, certain. That's a conceptual economist.

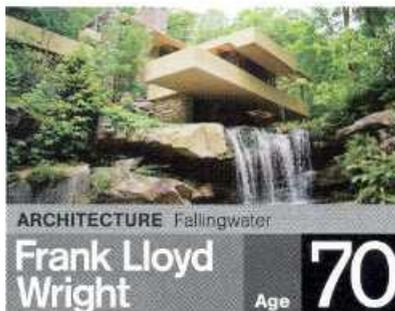
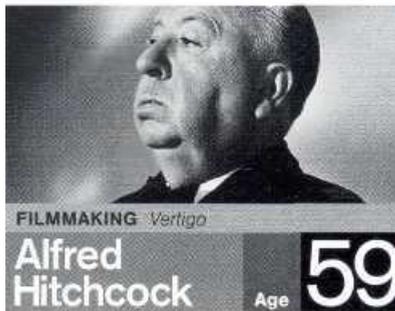
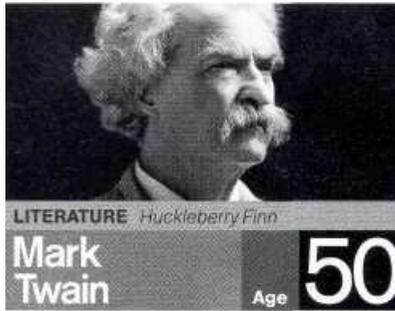
An experimental economist is someone like... Galenson. He progresses more quietly, more inductively, step-by-careful-step. And he often sails into the winds of indifference - from the art world, which believes that creativity is too elusive for econometric analysis, and from colleagues who can't comprehend why he's wasting his time with picture books. At one point, he leans over his chicken sandwich and tells me quietly and in mild horror, "I don't have a colleague who knows a Manet from a Monet."

Yet Galenson, whose parents were both economists, pushes on, ever approaching the asymptote. "Most people in economics do their best work before the age of 35. And I was constantly irritated that these guys were getting ahead of me," Galenson says. "But from very early in my career, I knew I could do really good work. I didn't know exactly how, and I didn't know when. I just had this vague feeling that my work was going to improve."

THE MOST-REPRODUCED 19TH-CENTURY work in US and European art history texts is Georges Seurat's *Sunday on La Grande Jatte*. The painting, completed in Paris in 1886, now hangs on the second floor of the Art Institute of Chicago. One morning in April, I visit

EXPERIMENTALISTS

... while others bloom late, doing their best work after lifelong tinkering.



the museum with Galenson to look at this and other masterpieces.

Walking the floors of a museum with David Galenson is a treat. He is astonishingly well informed about art. For nearly every painting I point to, he accurately pinpoints the year it was made, tells me its backstory, and describes something my pedestrian eyes haven't noticed. He is an erudite, insightful guide who keeps things entertaining with salty asides. "Monet had a lot of balls," he explains in one gallery. "Renoir was a very peculiar guy," he says later. Several times during our four-hour journey through the museum, tourists and schoolteachers sidle up to eavesdrop on his commentary.

Galenson threads his small frame through the swarm of visitors gathered in front of *La Grande Jatte*, considers it for a moment, and then launches into an explanation of why this artist was the quintessential conceptual innovator. "Seurat starts off at the official academy," Galenson says. "He goes and finds the Impressionists, and he works with them. But he's a very nerdy guy. He's sort of a proto-scientist, and he wants to be systematic." Seurat knew about recent discoveries on optical perception - including that people perceive a hue more vividly when it's paired with its opposite on the color wheel. So he broke from the Impressionists to study the science. He made dozens of preparatory studies for the painting, then executed it with scientific precision.

As Galenson explains, "This guy comes along and says, 'Look, Impressionism has been all the rage. But these guys are unsystematic, they're casual. I'm going to make a scientific, progressive art. And this is going to be the prototype of the new art. In the future, everyone will paint scientifically.'" Seurat was 25.

"This is his dissertation, basically. This is like 'Foundations of Economic Analysis,'" Galenson tells me. "It's like Samuelson saying, 'I'm going to unite all of economics.' Seurat is saying, 'We're discovering the underlying principles of representation.' One of them is the systematic use of color. And this is the masterpiece." *La Grande Jatte* changed the practice of nearly every painter of its time.

Alas, this is the only painting for which Seurat is remembered - in part, because he died five years after 166 >

creativity

< 153 completing it. But that would be the case even had he lived far longer, Galenson maintains. "He did the most important work of his generation; he couldn't have done it again. There's no law you can't do it again. But once you've written *Gatsby*, it's very unlikely you're going to outdo it." (Indeed, Fitzgerald went on to write two more novels, one published posthumously, but neither approached the importance of *The Great Gatsby*.)

We meander through the museum and stop awhile in Gallery 238, which includes two paintings by Jackson Pollock. Galenson gestures toward the first, *The Key*, done in 1946, when Pollock was 34 years old. It looks like a child's drawing - thick lines, crayony colors, underwhelming. "Pollock was a really bad artist at this point," Galenson says.

Nearby is another Pollock, *Greyed Rainbow*, a large and explosive work done in 1953. It's spectacular. Pollock was an experimental innovator who

GALENSON'S THEORY OF ARTISTIC life cycles is hardly bulletproof. Picasso, the marquee youthful innovator, painted his incomparable condemnation of the Spanish Civil War, *Guernica*, at the creaky age of 56. Is that somehow an exception? Sylvia Plath, a prolific conceptualist poet, did extraordinary work in her twenties but committed suicide in her early thirties. Couldn't she have continued innovating if she'd lived? Philip Roth won a National Book Award for *Goodbye, Columbus* in his twenties and a Pulitzer Prize for *American Pastoral* in his sixties. Where does he belong?

Galenson recognizes the limits of dogmatic duality. In his later papers, as well as in the book he published this year, he has refined his theory to make it less binary. He now talks of a continuum - with extreme conceptual innovators at one end, extreme experimental innovators at the other,

activity is all about creation - even more so today, as advanced economies shed routine work and gain advantage through innovation and ingenuity. If the link between age and creative capacity applies outside the bounds of the arts, then every economic institution - universities, companies, governments - should take note. Galenson's ideas may yield clues about how to foster fresh thinking in a wide range of organizations, industries, and disciplines. If nurturing innovators is an economic imperative, the real peculiarity isn't that Galenson is studying creativity; it's that other economists aren't.

Which leads to the second gap. Consider the *word genius*. "Since the Renaissance, genius has been associated with virtuosos who are young. The idea is that you're born that way - it's innate and it manifests itself very young," Galenson says. But that leaves the vocabulary of human possibility incomplete. "Who's to say that Virginia Woolf or Cezanne didn't have an innate quality that simply had to be nourished for 40 or 50 years before it bloomed?"

The world exalts the young turks - the Larrys and the Sergeys, the Picassos and the Samuelsons. And it should. We need those brash, certain, paradigm-busting youthful conceptualists. We should give them free rein to do bold work and avoid saddling them with rules and bureaucracy.

But we should also leave room for those of us who have, er, avoided peaking too early, whose most innovative days may lie ahead. Nobody would have heard of Jackson Pollock had he died at 31. But the same would be true had Pollock given up at 31. He didn't. He kept at it. We need to look at that more halting, less certain fellow and perhaps not write him off too early, give him a chance to ride the upward curve of middle age.

Of course, not every unaccomplished 65-year-old is some undiscovered experimental innovator. This is a universal theory of creativity, not a Viagra for sagging baby boomer self-esteem. It's no justification for laziness or procrastination or indifference.

But it might bolster the resolve of the relentlessly curious, the constantly tinkering, the dedicated tortoises undaunted by the blur of the hares. Just ask David Galenson.

Galenson points to an early Jackson Pollock painting. "It's a piece of crap."

spent two decades tinkering, and this painting is a triumph of that process. To paint it, he laid the canvas on the floor, splattered it with paint, walked around it, tacked it to the wall, looked at it, put it back on the ground, splattered it with more paint, and so on. "This painting is full of innovations," Galenson says, "but Pollock arrived here by trial and error. He was a slow developer."

"Take a few steps back," Galenson directs me. "If you were to describe this to somebody and see the jagged edges, you might say this is a really agitated painting. If you had this in your house, would it make you nervous?"

No, I answer.

"No. It's perfectly resolved. This is a great visual artist making a great work," Galenson says. "He didn't start this way."

We walk back to *The Key*. "Look at this thing," Galenson says. "It's a piece of crap. If that weren't by a famous artist, it wouldn't be here."

"Seurat died at 31," Galenson reminds me. "If Pollock had died at 31, you never would have heard of him."

and moderates in the middle. He allows that people can change camps over the course of a career, but he thinks it's difficult. And he acknowledges that he's charting tendencies, not fixed laws.

Just because a theory isn't perfect, though, doesn't mean it's not valuable. What Galenson has done - and what might deliver the recognition that bypassed him in his youth - is to identify two significant gaps in our understanding of the world and of ourselves.

The first gap exists within his own field. Galenson mentions that his professional colleagues scratch their heads over his research. "It doesn't fit immediately into what economists do," he tells me. "The word *creativity* won't appear in the index of an economics textbook." Then, ever the empiricist, he rises from his chair, grabs a textbook off a shelf, and shows me the lacuna in the end pages.

That's a serious omission. Although Galenson has limited his analysis mostly to artists, he believes the pattern he's uncovered also applies to science, technology, and business. Economic