

# Two is the magic number: a new science of creativity.

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*This article introduces a series on creative pairs. You can read the second piece in the series, a look inside the Lennon/McCartney partnership, here (<http://www.slate.com/id/2267342/entry/2267343/>).*

Paul McCartney and John Lennon

What makes creative relationships work? How do two people—who may be perfectly capable and talented on their own—explode into innovation, discovery, and brilliance when working together? These may seem to be obvious questions. Collaboration yields so much of what is novel, useful, and beautiful that it's natural to try to understand it. Yet looking at achievement through relationships is a new, and even radical, idea. For hundreds of years, science and culture have focused on the self. We talk of *self*-expression, *self*-realization. Popular culture celebrates the hero. Schools test intelligence and learning through solo exams. Biographies shape our view of history.

This pervasive belief in individualism can be traced to the idea most forcefully articulated by René Descartes. “Each self inhabits its own subjective realm,” he declared, “and its mental life has an integrity prior to and independent of its interaction with other people.” Though Descartes had his challengers, his idea became a core assumption of the Enlightenment, as did Thomas Hobbes’ assertion that the natural state of man was “solitary” (as well as “poor, nasty, brutish, and short.”)

Following this line, the first modern psychologists focused on the individual. Emil Kraepelin, the godfather of biological psychiatry, looked for organic explanations of illness. Despite Sigmund Freud's interest in early-life relationships, he treated his patients by having them speak into silence and saw cure as a reconciliation of internal conflicts.

### ***Creative Pairs: Lennon and McCartney***

Beyond illness, the fundamentals of healthy life took root from the idea of the atomized person. Jean Piaget, who created modern development theory—the system of thought about how children's minds work and grow—emphasized relationships to objects, not people. Even the most basic relational tool—the way we speak—was shaped by individualism, following Noam Chomsky's notion of language as an expression of inborn, internal capacities.

This focus on the self meshed tightly with Western ideology—the Ayn Randian notion of the rugged man forging his destiny on the forbidding plains. (A 1991 Library of Congress survey found Rand's *Atlas Shrugged* (<http://www.amazon.com/gp/product/0452011876?ie=UTF8&tag=slatmaga-20&linkCode=as2&camp=1789&creative=390957&creativeASIN=0452011876>) second only to the Bible as the book that made the most difference in American readers' lives.) The triumphant Western position in the Cold War established individual liberty and individual choice as the root unit of society—in opposition to the Marxist emphasis on collective achievement.

The ultimate triumph of the idea of individualism is that it's not really seen as an idea at all. It has seeped into our mental groundwater. Basic descriptions of inter-relatedness—*enabling, co-dependency*—are headlines for dysfunction. The *Oxford American Dictionary* defines individualism as, first, “the habit or principle of being independent and self-reliant” and, second, as “a social theory favoring freedom of action for individuals over collective or state control.” This lopsided contrast of “freedom” vs. “state control” is telling. Even our primary reference on meaning, the dictionary, tilts in favor of the self.

But a new body of research has begun to show how growth and achievement emerge from relationships. The new science begins with infancy. For centuries, babies were seen as blank slates who just filled their stomachs, emptied their bowels and bladders, and cried and slept in between. As for any significant aspects of their environment, small children were seen as passive receivers. (And largely insensitive ones: For most of the 20<sup>th</sup> century, doctors routinely operated on babies without anesthesia, believing them exempt from pain.)

But a burgeoning field has shown that, from the very first days of life, relationships shape our experience, our character, even our biology. This research, which has flowered in the last ten years, took root in the 1970s. One reason, explains the psychologist and philosopher Alison Gopnik, was the advent of the simple video camera. It allowed researchers to easily capture and analyze the exchanges between babies and their caregivers. In video of 4-month-olds with their mothers, for example, the two mimic each other's facial expressions and amplify them. So, a baby's grin elicits a mother's smile, which leads the baby to a full-on expression of joy—round mouth, big eyes. This in turn affects the mother, and so on in a continuous exchange that entwines the pair.

Emily Dickinson and Susan Huntington Gilbert

It's common sense that babies and mothers affect each other. But when you stop the tape and look at it frame by frame—as the researcher Beatrice Beebe and her team did in this experiment—you see how remarkably fast the exchange takes place, down to fractions of a second. It's not that a baby waits for stimulus from her mother and responds in kind. Actually, as the psychologist Susan Vaughan puts it, “both parties are processing an ongoing stream of stimuli and responding while the stimulation is still occurring.” Another study of 2-day-old babies found similar results.

Emotions, Vaughan asserts, are “peopled” from the start. This dynamic turns out to play a critical role in the development of neural circuits that shape not only interaction, but autonomy too. In other words, the way we experience ourselves

is inextricably linked to the way we experience others—so much so that, on close view, it's hard to draw a concrete distinction between the other and the self. (This in turn raises questions about what the “self” actually is.)

The sensation of “mirror neurons” helped further dissolve the distinction. About 10 years ago, a team of Italian researchers showed that certain neurons that fire during actions by macaque monkeys—when they pick up a peanut, for example—also fire when they watch someone else pick up the peanut. It's probably overblown to say (<http://www.slate.com/id/2165123/%5D>)—as many have—that this phenomenon can explain everything from empathy and altruism to the evolution of human culture. But the point is that our brains register individual and social experience in tandem.

Mirror neurons are just one brick in the broad and widening foundation of “social neuroscience.” The University of Chicago's John Cacioppo, who coined the term with his colleague Gary Berntsen, has helped pioneer research that shows how social connection shapes everything from depression and anxiety to high blood pressure, obesity, and heart disease.

Drawing on evolutionary psychology, cognitive experiments, and brain scans, Cacioppo and his colleagues make a persuasive case that what we consider the “self” is in its essence social. “It sounds like an oxymoron,” Cacioppo says. “But it's not. In fact, the idea that the center of our psychological universe, and even our physiological experience, is ‘me’—this just fundamentally misrepresents us as a species.”

It's not an accident that this new work is ascendant at a time when the Western world no longer identifies itself in opposition to collectivism, and where the Internet and social media have offered an obvious metaphor for webs of connections. “We're ready for a Copernican revolution in psychology,” Cacioppo says. If it comes, the era of the self will yield to something that may be much more interesting.

## **The Myth of the Lone Genius**

If relationships shape us so fundamentally, how—in the study of creativity—could they also be so obscure? Why are we preoccupied with the lone genius, with great men (and, more now than in the past, great women)? Evolutionary psychologists might point to how our ancestors focused on the alpha male of a pack or the headman of a tribe. But there are contemporary explanations.

For one thing, male-female acts have often kept one partner behind the curtain. The eminent psychoanalyst and social theorist Erik Erikson acknowledged that his wife of 66 years, Joan Erikson, worked with him so closely that it was hard to tell where her work left off and his began. But he drew the salary; his name went on the cover of *Young Man Luther*

(<http://www.amazon.com/gp/product/0393310361?ie=UTF8&tag=slatmaga-20&linkCode=as2&camp=1789&creative=390957&creativeASIN=0393310361>). He is among history's most famous social scientists; she doesn't even have a Wikipedia entry.

Gender relations, though, are only one cause for hidden partners. The quiet, careful member of a pair may naturally be diminished in comparison with the brash, dramatic one. Braque and Picasso created Cubism together, but the mercurial Spaniard emerged as the star of the movement while history shunted the quiet Frenchman to the side.

The custom of hidden partners is often industry standard: Tenure committees insist on judging individual work, even though collaborations are core to academic culture. CEOs have become like synecdoches for their companies, though their effectiveness depends on partners and teams. (Could Steve Jobs have reinvented Apple without his design guru Jonathan Ive?)

To illustrate the consistently hidden partner with an obvious example: Book editors don't put their names on covers. Their reputation largely depends on authors—who can be notoriously ungrateful and committed to the idea of their solitary genius. Jack Kerouac's *On the Road*

(<http://www.amazon.com/gp/product/0142437255?ie=UTF8&tag=slatmaga-20&linkCode=as2&camp=1789&creative=390957&creativeASIN=0142437255>)

55) sat on slush piles all around Manhattan until Malcolm Cowley, then an editor at Viking, undertook the laborious effort (literary, political, emotional) of shaping it for publication. But afterward, Kerouac and the Beats portrayed Cowley as a villain who muddied the famous unbroken typescript, which they claimed was powered by Benzedrine and holy light.

Even when a creative partnership is inescapable, principals may resist acknowledging its influence. Maxwell Perkins, the great editor who discovered and shaped the works of F. Scott Fitzgerald and Ernest Hemingway, also made magic with Thomas Wolfe. Their collaboration made Wolfe's sprawling manuscripts into the epic novels *Look Homeward Angel*

(<http://www.amazon.com/gp/product/0743297318?ie=UTF8&tag=slatmaga-20&linkCode=as2&camp=1789&creative=390957&creativeASIN=0743297318>) and *Of Time and the River*

(<http://www.amazon.com/gp/product/0684867850?ie=UTF8&tag=slatmaga-20&linkCode=as2&camp=1789&creative=390957&creativeASIN=0684867850>).

At first, Wolfe praised his partner, comparing his role in *Of Time and the River* to “a man who is trying to hang onto the fin of a plunging whale.” Maxwell's tenacity, Wolfe said, gave him his “final release.” The irony is that just such exuberant acknowledgments helped fuel a major critic's charge, in the *Saturday Review*, that the author's “incompleteness” could be seen in “the most flagrant evidence” that “one indispensable part of the artist has existed not in Mr. Wolfe but in Maxwell Perkins.”

Wolfe was apoplectic at the criticism, but he accepted the premise. He raged at the idea that he couldn't “perform these functions as an artist for myself.” As Fitzgerald declared, the test of a first-rate mind is the ability to hold two opposing ideas without cracking up. Apparently Thomas Wolfe could not grasp the paradox that he was both a complete artist and a dependent partner. Perkins, meanwhile, insistently diminished his role. “Editors aren't much,” he wrote,

“and can’t be. They can only help a writer realize himself.” This statement way underplays his role, but would be odd even if accurate. *Only* help a writer realize himself? That’s like saying the legs only support the torso.

The other reason the lone genius myth persists is that “collaboration” gets defined so narrowly, as though the only relationships that matter are between peers of roughly equal power. In fact, it is often the most independent virtuosos who need relationships the most. Take golf, for example. By PGA tour rules, professional golfers play the links without coaches or managers. So the role of psychologist, strategist, and counselor falls to the caddie. Tiger Woods, now infamous for his promiscuity, has stuck for nearly 11 years with caddy Steve Williams. Their bond is so tight that Williams not only supports his boss but taunts him—and even misleads him. At the 2000 PGA Championship, on the fairway of the 71<sup>st</sup> hole, Woods needed a birdie to catch the leader. Williams calculated 95 yards to the flag—but he told Woods 90. “Tiger’s distance control was a problem,” Williams explained to *Golf* magazine. “So I would adjust yardages and not tell him.” Woods ended up hitting the ball inside two feet from the cup and went on to win. Williams has said that he gave Woods incorrect yardages for the better part of five years.

If you don’t know golf intimately, you’d never consider the caddie relationship. Same goes for many fields. With surgeons, who thinks of the indispensable nurse? Few outside the film industry pay attention to the director of photography, but insiders know that Wes Anderson’s aesthetic is shaped in large part by Robert Yeoman. The architect Frank Gehry leans heavily on his deputy, Craig Webb.

But ignorance alone can’t be entirely responsible for the myth of the individual creator. At times, the myth is so pervasive, and so wrong, that it points to a basic problem in our thinking. Consider Emily Dickinson, who in the popular mind personifies the lone genius, composing poetry in the stillness of her room, clad in monastic white, only occasionally lowering her basket from her bedroom window.

But Dickinson was actually deeply engaged with a number of contemporaries, who were vital to her work. Some, like Thomas Wentworth Higginson, are at least acknowledged (more so in the wake of Brenda Wineapple's book *White Heat* (<http://www.amazon.com/gp/product/0307456307?ie=UTF8&tag=slatmaga-20&linkCode=as2&camp=1789&creative=390957&creativeASIN=0307456307>).

But popular history has lost, and literary history has only lately recovered, the essential, decades-long bond between Dickinson and her sister-in-law Susan Huntington Dickinson. As Martha Nell Smith and Ellen Louise Hart show in *Open Me Carefully* (<http://www.amazon.com/gp/product/0963818368?ie=UTF8&tag=slatmaga-20&linkCode=as2&camp=1789&creative=390957&creativeASIN=0963818368>), the poet was on fire from within but her connection to Susan—whom she called “Imagination” itself, and a source of knowledge second only to Shakespeare—helped fuel the flames.

The shift in understanding creativity is well underway. The stereotypes of miraculous breakthrough moments—and the incessant drive to locate them in the head of epic individuals—are slowly yielding to a portrait of complex, meandering, inherently social paths toward innovation. Notable pioneers of this thinking include the psychologists Keith Sawyer and Vera John-Steiner and the popular writers Steven Johnson, author of the forthcoming *Where Good Ideas Come From* (<http://www.amazon.com/gp/product/1594487715?ie=UTF8&tag=slatmaga-20&linkCode=as2&camp=1789&creative=390957&creativeASIN=1594487715>) and my brother, David Shenk (it's true, not just sibling love), with *The Genius in All of Us* (<http://www.amazon.com/Genius-All-Us-Everything-Genetics/dp/0385523653>).

Even historically, it's not as though the idea of the individual hero has lacked for dissidents. Critics from Herbert Spencer to Howard Zinn have challenged the “great man” theory of history, emphasizing cultures instead (in Zinn's case, the



culture of ordinary people). A more extreme challenge to the self-centered worldview comes from process philosophy, a school inspired by Alfred North Whitehead, which emphasizes exchange and inter-dependency—not only among people but between species; and not only moment to moment but across time.

In the best and most problematic ways, process thought makes the head spin. It feels right to many people, when they consider it, that truth is dynamic, not static; that we create one another; that our “selves” converge in the present from a relationship to the past and future. That human creativity stems from culture is hard to deny. Just look at the transcendentalists or the Bloomsbury circle—or the famous, peculiar cultures at Apple or Google—or the intense ferment in the scientists who split the atom.

But myths take hold for a reason. It's easy and satisfying to reduce a big, complex cast to a single character—giving Edison sole credit for the light bulb, or Freud for psychoanalysis.

### Steve Williams and Tiger Woods

The human mind depends on narrative, characters, and concrete action, while the idea of interdependence easily dissolves into abstraction. Say, for example, we trace the influences on Einstein, and draw concentric circles around him, first with his immediate peers (including Michele Besso, with whom Einstein worked out the theory of relativity in conversation), then to the scientific circle of his era, then to the influences of the previous generation. Where do we stop—with the ancient Greeks? Even if you acknowledge the depth and breadth of Einstein's connections, it's near irresistible to call him a genius and go on your way. Give an audience a big enough ensemble cast, their eyes will naturally seek a star.

**1 + 1 = Infinity**

To take on the myth of the lone genius, we need not only to draw on the best science and history, we also need to focus on the fundamental social unit: the pair. As Tony Kushner writes in his notes to *Angels in America* (<http://www.amazon.com/gp/product/1559362316?ie=UTF8&tag=slatmaga-20&linkCode=as2&camp=1789&creative=390957&creativeASIN=1559362316>), “the smallest indivisible unit is two people, not one; one is a fiction.” Buckminster Fuller got at the same idea when he wrote that “[u]nity is plural and, at minimum, is two.”

In the sphere of romantic love, most of us already accept the primacy of pairs. And much of the new relationship science is focused on romantic and personal intimacy. But love, at its essence, is private and inscrutable. Long-bickering couples often outlast their placid neighbors, and this oddity layers on top of another problem: What’s our unit of measure for “good” relationships? Is it fiery passion? Is it duration? Is it the number of kids who go to the Ivy Leagues?

With creativity, by contrast, we start with a public text that can be subjected to reasonable (if not perfect) tests. Whether or not you like the Beatles’ music, it’s perfectly straightforward that most people accept their work as novel, useful, and beautiful.

So this is the task of this series, to see how creative relationships work. I start with a few assumptions.

First, we can’t answer the question with theory. Though science offers some context and insights, we need to look at real lives and see what lessons they offer and what patterns they suggest.

Second, collaborators exist across fields, and in many forms. I’ll look for cases in the sciences, arts, business, and philosophy: Watson and Crick belong here alongside Gilbert and Sullivan, Engels and Marx. Hidden partners need scrutiny, as do the frontman and his sidekick, mentors and mentees, masters and muses. Let’s define collaboration broadly, as a mutuality that shapes a body of work.

Third, this project won't come from a single mind. Of course, as with everything I've ever written, I'm dependent on my colleagues. But for a subject so vast, I need to invite new relationships—with each of you. If I'm right, your questions, observations, ideas, and criticisms will not only add to my work—it will change its character fundamentally.

Here are some questions I have for you:

Which relationships do you find most compelling? Which bonds suggest some kind of electrical charge? Where does  $1 + 1$  add up to infinity? Your cases may be historical or contemporary, high culture or lowbrow, famous or obscure. Please give some detail along with your nominees. What do you think accounts for their success? What do you know about their dynamic?

Second, can you suggest a *form* of relationship that probably eludes mass attention? For example, it was news to me, when I heard from the food writer Amanda Hesser that every star chef has a crucial partner behind the scenes. (She gave the example of Mario Batali and Joe Bastianich.) The music writer Richard Gehr told about the role that the arranger played in making jazz compositions sing. (He mentioned Gil Evans and Miles Davis.) The Jewish scholar—and surfer—Tony Michaels told me about the role of the “board shaper,” who observes and intuits just what a particular surfer needs, and custom-crafts a board that best rides the waves. Al Merrick, Tony said, is a legend in the profession.

As you can see, I've had enough of these conversations to know how much I don't know. What relationships matter most in your field or one you know well?

The suggestions and ideas I hear from you will form the bedrock of this project moving forward. For now, let's consider two stellar pairs from a variety of angles. First up, a new telling of the Lennon/McCartney relationship (<http://www.slate.com/id/2267342/entry/2267343/>)—considering the space between them, their dynamic, their mutuality.

Then, next week, I'll also be following a single pair, Robbi Behr and Matthew Swanson of Idiots' Books (<http://www.idiotsbooks.com/>), subjecting them like guinea pigs to a variety of tests, experiments, and oddball exercises to get the core of their bond.

Let me hear from you in the comments below, and stay tuned (<http://www.slate.com/id/2267342/entry/2267343/>).

*Read the next part (<http://www.slate.com/id/2267342/entry/2267343/>) of the series, a look inside the Lennon/McCartney partnership (<http://www.slate.com/id/2267342/entry/2267343/>).*

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