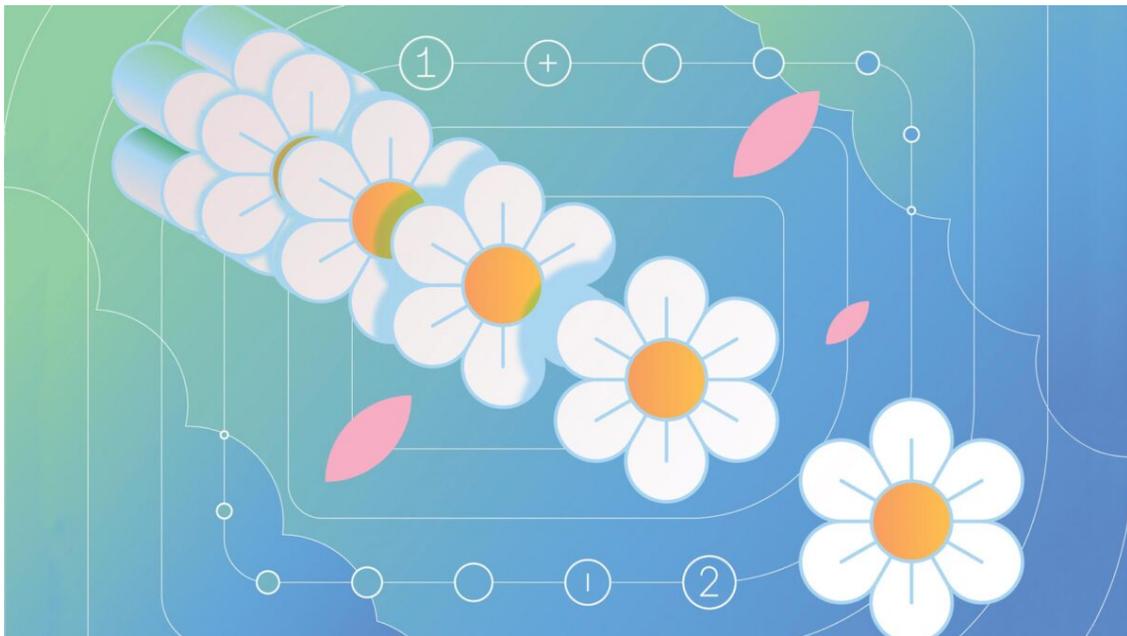


Cultivating the Four Kinds of Creativity

by Gabriella Rosen Kellerman and Martin E.P. Seligman

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Summary. In the decades to come, creativity will be key to doing most jobs well. In this article the authors offer a new typology that breaks creative thinking into four types: integration, or showing that two things that appear different are the same; splitting, or seeing how... [more](#)

One island of stability in the sea of conversation about the future of work is the conviction that our jobs will become increasingly creative. The World Economic Forum, McKinsey, and nearly every major think tank seem aligned around this hypothesis, offering

heaps of data to support it. The trend is not just about the delegation of rote tasks to automation; it's also about the accelerating pace of change and the increasing complexity of business, which demand original responses to novel challenges far more frequently than ever before.



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Many companies now include creativity as a core competency for employees at all levels—especially those on the front lines—and across all functions, from sales and marketing to accounting and operations to customer service. Individuals and talent managers must therefore get smart about what it takes to foster and manage this skill. Although the science of creativity is young compared with other areas of psychology and cognitive neuroscience, our growing understanding of it points to new directions for creative development. In this article we offer a typology that breaks creative thinking into four types: *integration*, or showing that two things that appear different are the same; *splitting*, or seeing how things that look the same are actually different or more usefully divided into parts; *figure-ground reversal*, or realizing that what is crucial is not in the foreground but in the background; and *distal thinking*, which involves imagining things that are very different from the here and now.

Most of us tend to think in just one of these four ways, and we benefit from knowing which one comes naturally to us. We can also learn to hone our creativity in the other dimensions. Managers need to understand both their own strengths and how to balance the types of thinking across their teams to execute creative projects. And organizations can use this typology to increase innovation across the workforce.

Integration

Integration may be local—stitching together a few concepts—or sweeping: a grand unifying theory.

The 17th-century mathematician Isaac Newton was a genius at integration. After co-inventing calculus, itself enormously integrative, he happened upon the idea that would make him even more famous. The story does involve an apple, but it didn't fall on his head. Instead, looking out a window one night, he noticed that a two-inch piece of fruit on the ground 20 feet from him occupied the same amount of visual space as did the faraway moon. He wondered not about the trick of perspective but whether the force drawing the apple to the ground was the same as what held the moon in orbit—an idea that gave rise to his inverse square law: that the gravitational attraction between two bodies is inversely proportional to the square of the distance separating them. Integration is often at the heart of scientific discovery.

It's also a key form of corporate innovation today. Consider the Apple iPhone. Its designers' success lay in recognizing that when tools such as cameras, phones, and music players are digitized, they are all capturing, storing, retrieving, and transmitting data in the same way, through semiconductors and liquid crystal displays; therefore, they could be combined in a single device—perhaps the most powerful tool now at our disposal. Four decades ago the phone hanging on your wall had nothing to do with the boom box sitting on your console or the camera filled with film you'd soon drop off for developing.

How does integrative creativity show up in everyday work? Let's consider a hypothetical office-supply retailer, Capella Paper, that wants to attract more Millennial customers. Jerome, an email marketer, is an employee working on the problem. He finds several studies showing that professionals in their twenties and thirties are vocal advocates of preserving hybrid or remote

working arrangements postpandemic. He hypothesizes that two groups Capella treats as distinct—Millennials and remote workers—may in fact align as buyers of office supplies. Jerome retrieves an analysis by his team on a spike in home-office purchases in the spring of 2020 and looks to see which email promotions—all targeting newly remote workers—were most successful in that period. He selects an old promotion offering free printer-toner refills with bulk paper purchases and makes a few tweaks for the new target demographic, resulting in a 35% higher click-through rate compared with the company’s average for Millennial customers.

Splitting

The opposite kind of creative thinking is splitting, and the history of science is full of examples. The periodic table of the elements splits earth, air, fire, and water into 118 parts. Medical breakthroughs regularly result from the separation of what was thought to be a single disease into several, each of which can be more precisely treated. One of the greatest manufacturing innovations of all time—the assembly line—involved splitting. Before the Industrial Revolution, one craftsman might oversee the production of a good from start to finish. Guns, for example, were made by individuals skilled in both woodworking and metalwork; the same was true of steamer trunks and clocks. But then the Swedish inventor Christopher Polhem introduced the concept of interchangeable parts, which could be made separate from a whole and used for a wide variety of products. At first many people were skeptical: When, in 1785, the Frenchman Honoré Blanc publicly demonstrated that he could assemble a working gun by selecting components from a large pile of interchangeable parts, audience members were shocked. This idea led to further division—of human labor—allowing for faster, more consistent, and scalable manufacturing that is still in use today.

A more recent application is quantum computing, an important application of particle physics, which breaks matter down into its smallest components. Whereas in classical computing a bit can occupy only a single position, quantum computing's qubit can occupy multiple positions simultaneously, exponentially increasing computing power. In 2019 Google's quantum processor Sycamore took 200 seconds to finish a task that would take a classical computer 10,000 years to complete.



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This type of creativity can be useful in many professional scenarios. Back at Capella, for example, a product manager, Carmen, has been studying which of the company's offerings are most popular with Millennials. She first separates consumer buyers from business buyers; the latter typically purchase for their small companies. Business buyers can be further divided into people who order a variety of supplies and whose purchases are waning, and those who buy just one or two products in large amounts and whose orders are holding steady or even increasing. Focusing on this second group, Carmen arrives at her "aha" by zeroing in on the product most frequently purchased by 30-something business buyers: Capella's trademark 6" x 8" grass-cloth-bound notebook. Through interviews she learns that people buy this item for two reasons: for note-taking by employees and for client gifts. Because Capella sells the notebooks only in bulk to businesses, they have become coveted. With that insight Carmen pitches a new line of luxury notebooks in a wider range of sizes and colors, available to both individual and commercial buyers

with an option to emboss initials or a corporate logo on the cover. Thus a single product is split into several lines for distinct purposes.

Figure-Ground Reversal

The term “figure-ground reversal” comes from the study of vision and refers to our ability to shift focus from the foreground to the background to produce a radically different picture. The well-known black-and-white silhouette of two faces in profile—or a vase in the middle—demonstrates how our minds can toggle back and forth between the two.

One of the most important neuroscientific discoveries of our lifetime was the default mode network, a set of brain regions involved in our mental downtime, and it happened owing to an accident of figure-ground reversal. Functional-imaging researchers were mapping the brain’s “task positive” networks—the regions that light up when we engage in focused activities such as solving anagrams and listening to lectures. In most of those experiments a control condition consisted of rest periods, during which the brain might be expected to go dark and quiet. Instead, scientists across numerous studies found that certain midline and medial-temporal-lobe brain structures consistently lit up during rest, suggesting not stasis but vibrant activity. We have since learned that the same thing happens when we daydream, and what we do during those periods is imagine and plan. Researchers weren’t trying to find the state in which we do some of our best thinking, but they did.

Here’s another example of figure-ground reversal: In 1957, when the Soviet space program launched *Sputnik*, the first satellite to orbit Earth, the U.S. military used two widely separated points on Earth to track *Sputnik*’s speed and position by means of the Doppler effect. But only in 1958 did it become clear that the far more profound application of the technology was for the exact opposite purpose: using points in space to track objects on Earth.

In that year the Advanced Research Projects Agency developed Transit to calculate the position and speed of any moving object using two widely separated satellites in space. Today we know this technology as the Global Positioning System, or GPS.

We see figure-ground reversal all the time in industry, too. Amazon Web Services was developed in response to Amazon's need to scale up its infrastructure. The software developers Chris Pinkham and Benjamin Black, who led the work, realized that others would want the solution they were envisioning—that it could be a compelling product to offer externally. Today AWS is a foreground business for the company, accounting for \$45 billion in revenue in 2020. Similarly, Slack, the ubiquitous messaging platform, started as an internal product to help Stewart Butterfield's company Tiny Speck develop a video game. That business fizzled out, but the team pivoted to the messaging app, and Slack went public in 2019. In 2021 Salesforce bought it for close to \$28 billion.

Imagine that Robert, a manager at Capella's Chicago store, has just returned from a leadership meeting where he learned about the company's push to attract Millennial customers. Over the next several weeks he spends time observing patrons' shopping habits in the store. He focuses on customers in professional attire who appear to be in their late twenties or early thirties, but he sees very few of them, and he can't identify any particular patterns in what they're buying. Though Robert normally works weekdays, he's called in one Saturday to cover for a colleague and continues his observations. At first he doesn't see anyone in his target demographic, but then he recognizes a repeat customer from earlier in the week, this time not in business casual but dressed down and shopping with what appears to be his school-age daughter. Robert realizes that he's overlooked a half dozen other Millennials that day alone because they were shopping not as professionals but as parents and were consistently looking for art and school supplies. He decides to stock those items in the middle aisles, with office supplies flanking them, and within a few

months his store leads the region in sales to the target demographic. Robert explains to Capella's leaders that it came down to focusing on the broader, whole-person context of Millennials' lives.

Distal Thinking

Finally, distal thinking involves imagining things as very different from the present. Many a creative genius has been characterized as someone who envisioned a radically new future that the rest of us initially couldn't see. The inventor Nikola Tesla, for example, once described his process as building and refining an object entirely in his imagination—even operating it in his mind. His distal brainchildren included the radio, the neon lamp, AC power, and hydroelectric power.

Sometimes innovators think so far ahead that the market isn't ready for their ideas. The computer scientist and cryptographer David Chaum invented anonymous digital cash in a 1983 paper, just as personal computers were coming into vogue, and well before access to the internet was ubiquitous. In 1994 his company, DigiCash, sent the first electronic payment. But the economic and technological ecosystem needed to support widespread adoption of digital currency did not yet exist, and DigiCash folded in 1998. Like many other first movers, Chaum paved the way for followers but benefited from only a small fraction of his invention's success.

More-successful distal innovators bridge the gap between the present and the future in one of two ways. The first is by accelerating market maturity, through promotions, partnerships, and focused launches. An example of this is another digital-payments company, PayPal. When it launched, in 1999, adoption of its full slate of intended uses was low. So rather than try to advance an ambitious vision before consumers were ready, the company focused on developing its user base through eBay, a platform where such payments were becoming the norm. The symbiosis was so perfect that eBay acquired PayPal in 2002, but

within a decade, as PayPal usage expanded well beyond its parent company, the entities split. Today PayPal is used in 200 countries, and its 2021 revenue topped \$25 billion.

A second way distal innovators help their radical vision ultimately become reality is with “backward” innovation—developing intermediary technologies that are immediately marketable and will move stakeholders along the maturity curve toward readiness for the actual invention. Take self-driving cars, which exist but aren’t yet prevalent for many reasons, including technological, infrastructure, and regulatory barriers. Another obstacle is consumer mistrust: Drivers are not yet ready to hand over the wheel. Thus we see stepping-stone products such as cruise control and automatic parking. These are incremental offerings that people *will* use and that should make them more comfortable with a driverless future.



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The electric car company Tesla logged a distal win by selling EVs as luxury purchases before the economics worked to make more-mainstream models. It is now trying to pave the way for fully autonomous vehicles by offering precursors: both traditional autopilot and something called “full self-driving capability,” which gives the car even more control. Led by its creative founder, Elon Musk, Tesla is training us to eventually embrace a previously unpalatable vision.

Even in organizations where innovation is more incremental, distal thinkers can often find big challenges that offer them a chance to shine. Piper, a Capella designer, has for years been

asking her managers how the company will operate when offices are entirely paperless. Encouraged by the new mandate to attract Millennials, she describes her vision of this future: eco-conscious digital natives operating in a fast-paced, mostly virtual work environment who will eschew office supplies for fully online tools. And yet, Piper says, many will still want physical products that link to the digital world for promotional or commemorative purposes. She describes a new line of memorabilia to honor project progress: commercial-real-estate “deal toys” with screens that change as the building is constructed, or customer-appreciation plaques with displays that show up-to-date utilization metrics of marquee software products the customer has purchased. Piper’s pitches make Capella think bigger and more boldly about what this demographic needs and demonstrate her unique ability to help the company get ahead of industry trends.

How to Proceed

Which type of creativity do you use the most? Each one offers a unique advantage—and potential blind spots. Integrators may try to see synergies where they don’t exist, while splitters may overcomplicate a simple solution.

Understanding your strengths as an individual is the first step. Look for places to apply them and watch out for overuse. At your next opportunity to innovate, push yourself to think in the styles that come less naturally to you. Before you settle on a path forward, challenge yourself to define at least one option for each of the four styles.

If you lead a team, how do you complement your skill set with other types of creative thinkers? When receiving proposals from your team, do you get options that explore all four forms of innovation? If not, ask for them.

At the organizational level, reflect on your business's recent innovations, both internal and external. Do any patterns emerge? Are your products typically the result of splitting, for example? Or integration? When was the last time you capitalized on a figure-ground reversal? Do you have enough distal thinkers in your midst who are pushing others to expand their thinking? How often are hiring managers considering the mix of innovation types on teams as they grow?

Creativity is an imperative for our new world of work. Cultivating all four types of divergent thinking at every level will afford greater odds of converting each new challenge into successful innovation.

Editor's note: Gabriella Rosen Kellerman and Martin E.P. Seligman are the authors of Tomorrowmind (Simon & Schuster, 2023), from which this article is adapted.

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