"Cutting-edge, paradigm-shattering work tends to come from people in obscure places who are freer to create because they're outside a hierarchy."

Garage—as an Abstract Noun and a Verb

By Richard K. Neumann Jr.

Richard K. Neumann Jr. is a Professor of Law at the Maurice A. Dean School of Law at Hofstra University in Hempstead, N.Y.

This is an article about six garages, a cab driver, an insurance salesman, two bicycle mechanics, and a patent clerk. It's also about legal writing as an incubator of creativity.

In any field, the highest status organizations and milieus aren't where the big breakthroughs come from. Cutting-edge, paradigm-shattering work tends to come from people in obscure places who are freer to create because they're outside a hierarchy. Thomas Kuhn showed how this pattern is repeated constantly over centuries in the sciences. It occurs everywhere else, too. The least foreseeable innovation tends to come not from the top, but instead at the margins.

The Garages

In a garage in Menlo Park, Calif., two graduate students, Larry Page and Sergey Brin, created the Web search algorithm from which Google® developed. Two decades earlier, in another garage nearby in Los Altos, two college dropouts, Stephen Wozniak and Steve Jobs built the first Apple® computer. Four decades before that, in yet another garage nearby in Palo Alto, William R. Hewlett and David Packard built the first audio oscillator.

They promptly sold eight of them to Walt Disney for the soundtrack of Fantasia. Disney himself had previously created mainstream animation using three successive garages in southern California.

“Garage is a state of mind,” according to Guy Kawasaki, “a rejection of the status quo.” (Kawasaki left Apple to set up a venture capital firm investing in start-ups.) Google, Apple, Hewlett-Packard, and Disney—four enterprises built on creativity—started in garages. Once-dominant companies, like International Business Machines (IBM), have been swept aside by what began in garages. And eventually the companies that began in garages will be swept aside by other companies that someday will start in the future equivalents of garages.

The Cab Driver and the Insurance Salesman

After Philip Glass studied musical composition in Paris from 1964 to 1966, he came back to New York and drove a cab. For a time, he and another minimalist composer, Steve Reich, used a truck to support themselves moving furniture. They later fell out over artistic issues. Glass also worked as a plumber. He didn’t earn a living from composing until after his forty-first birthday.

This sounds like the old story of the suffering artist—but it isn’t. Glass liked driving a cab. It provided time and space to think, with the rhythm of the city in the background. Ideas flowed while he was driving, and behind the wheel he planned a significant portion of his first opera. Although Einstein on the Beach is now recognized as the breakthrough postmodern opera, getting it produced was extraordinarily difficult, partly because of the nature of the music and partly because the music establishment isn't open-minded about opera scores written by cab drivers. Later, Glass wrote operas


3 At 232 Santa Margarita Avenue. The property can be viewed from a satellite and from the street at—naturally—Google Maps.

4 At 2066 Crist Drive.

5 At 367 Addison Avenue.

about Galileo Galilei, Johannes Kepler, and Mahatma Gandhi and other operas based on novels by Doring Lessing, Franz Kafka, and J.M. Coetzee, as well as symphonies, concertos, and chamber music.

Three generations earlier, Charles Ives sold insurance in Manhattan. He opened a brokerage with a partner, trained other salesmen, and scripted sales pitches with lines like: “I want to talk life insurance with you for four minutes. I will tell you something no agent has ever told you. ...” For industry magazines, he wrote articles with titles like “Writing Big Policies of Life Insurance.” And he wrote a pamphlet, *The Amount to Carry—Measuring the Prospect*, on how to estimate the amount of insurance a person (the prospect) can be persuaded to buy. He figured out how to use life insurance to avoid inheritance tax. He sold prodigious amounts of insurance.

At about the same time *The Amount to Carry* came out, Ives published a book, *Essays Before a Sonata*, on how music can express the transcendental philosophy of Emerson, Hawthorne, the Alcotts, and Thoreau, which is what Ives himself did in his *Concord Sonata*. During the day, Ives was selling insurance. In the evenings, he was composing classical music.

During the decades when Ives was an active composer, his music went unperformed. A cab driver might conceivably be mistaken for a suffering artist, but according to the music establishment, a successful insurance salesman couldn't possibly write music at all, much less good or great music.

Ives was the first real modernist composer. He was dissonant before Stravinsky and atonal before Schoenberg. But he used these as mere techniques to express who he was: a bandleader’s son who grew up in Danbury, Conn. Bernstein called him “our Washington, Jefferson, and Lincoln of music.” Insurance salesmen, however, do not get their work performed as long as they’re working as insurance salesmen. So nearly everyone in music knew about Stravinsky and Schoenberg before they knew about Ives.

The Bicycle Mechanics

So well known that it needn't be retold here is the story of the two Dayton, Ohio, bicycle mechanics who designed the first airplane and flew it from sand dunes on the North Carolina Outer Banks. But two aspects of that story aren't so well known.

First, Orville and Wilbur Wright didn't just invent the airfoil wing. They solved all the problems necessary to achieve heavier-than-air flight. Every airplane in the sky today operates aerodynamically, as their 1903 Kitty Hawk Flyer did.

The Wrights discovered the aerodynamic shape needed for a wing to overcome gravity and keep an airplane aloft by pushing air down as the plane moves forward. They discovered how to control an aircraft in three dimensions: adjusting the wing shape during flight to bank the airplane (in modern aircraft, through the hinged ailerons on the rear edge of wings); using a rudder in the vertical part of the tail to steer by aiming the airplane's nose while banking; using horizontal stabilizers (today at an airplane's tail) to steady the craft vertically; and adjusting those stabilizers' shape in flight (today using hinged flaps called elevators) as horizontal rudders to cause the airplane to go up and down. They rejected modeling their propeller after the marine screw of ships and instead designed it as a vertical rotating wing moving the airplane instead of a horizontal rotating blade.
“The mysteries of flight could be solved only by the best scientists at the centers of scientific research, not by cranks working in the back of a bicycle shop.”

forward. Their propeller, and every one since, moves air the same way a wing does, which is why a modern helicopter’s wing is the propeller on top. They created sophisticated engineering methods, such as wind tunnel testing. They reexamined all the formulae relied upon and the data generated by prior researchers and, with perfect accuracy, confirmed some and disproved others.

Second, they accomplished all this not in spite of their lowly status as bicycle mechanics but because they were outsiders.

No one took seriously their claim to have flown, despite the famous photograph of the first flight—Orville at the controls, Wilbur running alongside, and the airplane clearly casting a shadow onto the sands. To established scientists, the Wrights looked like frauds. Neither of them had attended college, and Orville was a high school dropout. The mysteries of flight could be solved only by the best scientists at the centers of scientific research, not by cranks working in the back of a bicycle shop. All the resources were held by competitors, principally Samuel P. Langley, who was supported financially by government and foundation grants, even though he failed repeatedly to solve any of the problems of flight.

The Wrights had an advantage more valuable than lavish financial support. They could think whatever they wanted without worrying about damage to careers because, like the garage pioneers, they lived outside conventional career paths.

Before the Wrights, another researcher had come close to the idea of banking an aircraft by adjusting the wing during flight. Edson F. Gallaudet, a junior member of the physics faculty at Yale, experimented with a kite designed to that effect. He seemed on the verge of a breakthrough but abruptly stopped: “Gallaudet’s colleagues at Yale had gotten wind of his aeronautical work and recommended that he dismiss his thoughts of flying if he wished to maintain his reputation as an engineer, as well as his employment.”

The Patent Clerk

In 1905, a clerk in the Swiss Federal Patent Office completed and published four short papers that changed physics. He had graduated from a polytechnical school rather than a university. European polytechnics were considered an inferior form of education, not intellectually rigorous, and intended for weak students. For two years after graduation, he couldn’t find steady employment anywhere in academia. Somehow he got a job in the patent office, where he worked for seven years—three of them before 1905 and three more afterward.

“I was able to do a full day’s [patent] work in only two or three hours,” Albert Einstein later explained. “The remaining part of the day, I would work out my own ideas.” Small subterfuges were necessary. “Whenever anybody would come by, I would cram my notes into my desk drawer and pretend to work on my office work.”

His coworkers indulged this eccentricity. They knew he was up to something, and they didn’t care.

After the Wunderjahr, which is what physics now calls 1905, Einstein applied again for university teaching positions, but to faculties his publications were unimpressive. They had been written by a patent clerk. He was rejected even for a high school teaching job. He obtained permanent employment in universities only after many humiliations.

Einstein was convinced that he would not have been able to write the four papers of his Wunderjahr if he had been on a university faculty at the time. According to Walter Issacson, his most recent biographer, Einstein “might have felt compelled

---

9 Translated from German, the titles are On a Heuristic Viewpoint Concerning the Production and Transformation of Light, 17 Annalen der Physik 132 (1905); Investigations on the Theory of Brownian Movement, 17 Annalen der Physik 349 (1905); On the Electrodynamics of Moving Bodies, 17 Annalen der Physik 891 (1905); Does the Inertia of a Body Depend Upon Its Energy Content?, 18 Annalen der Physik 639 (1905).
to churn out safe publications and be overly cautious in challenging accepted notions” because “originality and creativity were not prime assets for climbing academic ladders, especially in the German-speaking world, and he would have felt pressure to conform to the prejudices or prevailing wisdom of his patrons.”11 This is true in universities everywhere, according to Richard Cyert, a researcher who specializes in creativity: “Young faculty members in particular must worry about deviating from the ‘party line’ of their disciplines.”12

The patent office was not a fluke in Einstein’s career, although many academics today would like to dismiss it as that. The patent office epitomized who he was. He was happy there because he could think about whatever he wanted without having to worry about other people’s opinions. Most of his greatest intellectual achievements—the special theory of relativity, the idea that matter and energy are equivalent, the formula $E = mc^2$—occurred while he was a patent clerk.

The general theory of relativity appeared in print later, in 1916, but it too started in the patent office. “I was sitting in a chair ... when all of a sudden a thought occurred to me. If a person falls freely, he will not feel his own weight.” He later recalled that as “the happiest”—or, depending on the translation, “luckiest”—“thought in my life.”13 It took Einstein eight years to work out the ramifications of this insight, which generalizes his special theory of relativity consistently with Newtonian physics.

For the rest of his life, Einstein thought of the patent office gratefully as “that worldly cloister where I hatched my most beautiful ideas.”14 He always wished for what he had there, minus the obligation of two or three hours of patent work and the occasional need for subterfuge. Eventually he found it. Abraham Flexner—a critic of universities who had torpedoed and sunk conventional medical education through his 1910 book-length report to the Carnegie Foundation for the Advancement of Teaching—later became the director of the Institute for Advanced Study in New Jersey. In 1933, he provided a quiet office where Einstein could think about whatever he wanted, with no obligations and no distractions. That’s exactly what Einstein did for the next 22 years, until he died in 1955.

### Legal Writing as an Incubator for Creativity

Surveying all the research on creativity, Teresa Amabile found that one of the essential ingredients for a creative work environment is freedom from interfering judgments by those in the upper ranks of a hierarchy.15 Either there are no judgments, which is what happened in the patent office, or there’s no hierarchy, which is what the garages have accomplished. (Amabile found that another essential ingredient is “high stability of employment”—job security.)

Language, as everyone knows, evolves daily. Beginning now, garage can be used as an abstract noun for a kind of milieu. Internally, the community of legal writing is garage (not a garage) because it has the state of mind Kawasaki described earlier in this article. Other places are garage, too, but that’s a separate discussion. As a verb, garage should be able to express an abstract action. To garage is to step out of hierarchy into an unstructured place, mentally or physically or both, and create. Many legal writing teachers garage regularly.


---

11 Id. at 79.
13 Isaacson, supra note 10, at 145.
14 Id. at 78.
16 Id.