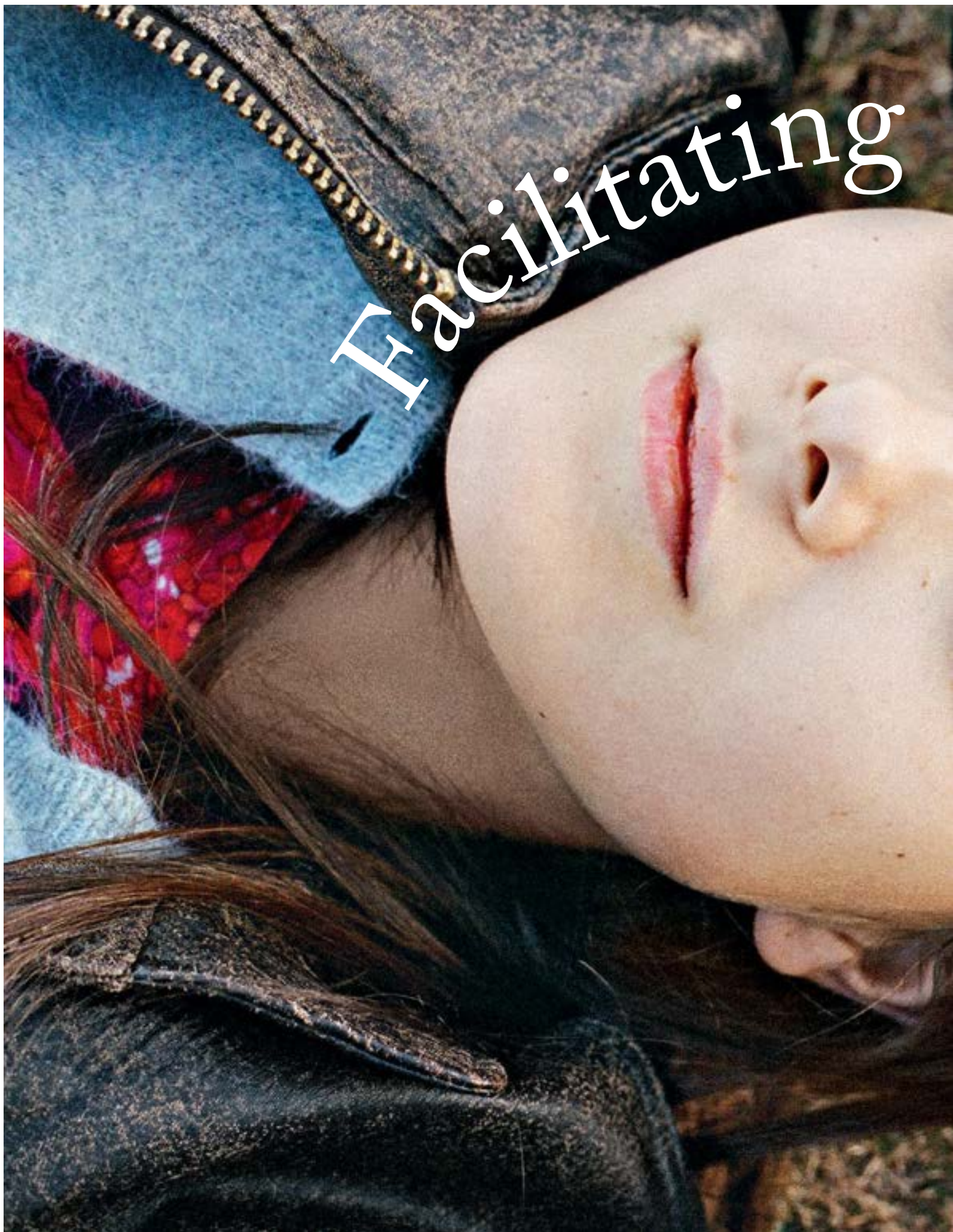


Facilitating



Inspiration



How do you come up with an idea?
There's no single recipe to follow.
But creativity needs freedom to blossom —
and it's hard work.

By Mathias Plüss

An old text on alchemy offers two suggestions for finding the philosopher's stone: "It can only be found by one who is consumed with its quest." And: "You labor in your search and find nothing — search not, and you will find."

The contradiction between the two reveals a deeper truth. Often, we can only find what we're looking for after we stop looking. The sleep that eludes us. True love that cannot be sought, only found. And also the inspiration that vanishes under pressure. Ideas are difficult to corral, like herding cats. And, like cats, they never come when we want them to.

The great zoologist Konrad Lorenz noticed that birdsongs are the most beautiful when they serve no particular purpose, while a blackbird's song becomes a harsh monotone when it wants to chase away an intruder or attract a mate. "It always amazed me," Lorenz wrote, "that the songbird reaches its artistic peak in exactly the same biological situation and mood as the human. That is, when it achieves a kind of spiritual equilibrium and distances itself from the seriousness of life, so that it sings in a purely playful way."

Failing the Stress Test

It's a common fallacy that necessity is the mother of invention. Art is the product of surplus, and even scientific research achieves its most useful results when it is not compelled to be practical at all costs. New discoveries cannot be planned, otherwise they wouldn't be new. It is counterproductive to demand creativity at the push of a button. >

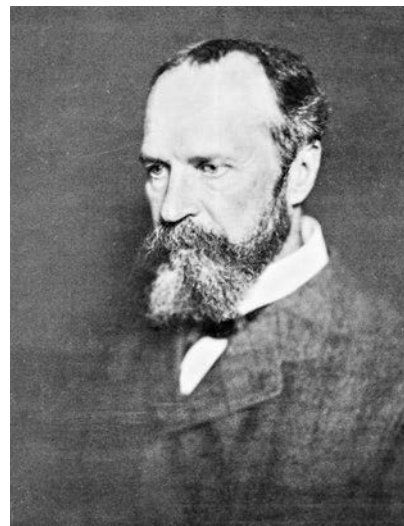
“Many people think that they come up with their best ideas under stress,” says the German psychologist Ernst Pöppel. “But studies usually show the opposite. Stress and the pressure of deadlines seem to put the brain in a state of anxiety that hinders, or even blocks, free thinking.” One study, the colorfully titled “Creativity under the Gun,” shows how employees thought they were more creative under pressure – but in reality, their creativity dropped by 45 percent on the most stressful days.

Of course, some things do work better under pressure. Anxiety narrows your focus and sharpens concentration, which is good for thinking logically. But new ideas don’t come from logic. Inspiration requires a clear head, and thoughts have to flow, so that you can connect the most disparate associations. Interestingly, this type of thinking works best in the dark, as the night lets the mind roam free. Analytical work, however, needs bright light.

Creative Chaos

Analytic and creative thinking each correspond to different brain activity. Researchers have discovered that the brain experiences regular, short phases where the neurons are firing in areas of the brain in identical rhythm. But the pendulum swings to periods of chaos. We believe that the brain takes care of routine tasks in the orderly phase, while it tests out new strategies and builds new connections in the chaotic one.

The American psychologist William James (1842–1910) described what he believed to be “the highest order of minds” as a “seething caldron of ideas, where everything is fizzling and bobbing about in a state of bewildering activity, where partnerships can be joined or loosened in an instant.” Not coincidentally, this description is reminiscent of a dream. Numerous scholars and artists report how important ideas have come to them after a visit from the sandman. Thanks to creative dreams, we not only have the electric clock and the periodic table, but also Richard Wagner’s E-flat major chord at the beginning of “Das Rheingold,” and Paul McCartney’s melody for “Yesterday.” The American golfer Jack Nicklaus has even said that he dreamed up



Necessity is not the mother of invention: zoologist Konrad Lorenz (1903–1989); American psychologist William James (1842–1910), photographed around 1890.

a new swing in 1964, which brought him back to the top of his game.

This might sound like child’s play, but productive dreams are the result of hard work. Scientists may come up with the solution to a problem in a dream, but they likely have been pondering the problem for years. In order for something new to arise, the unconsciousness has to have space to roam. Inspiration often comes only after you’ve stepped away from the problem, whether by going on vacation or going to sleep.

Calm and Creative

Relaxation is helpful here, as is anything that takes your mind off the problem. You need to be calm to be creative. Studies show that people perform 50 percent better on a creativity test after a four-day backpacking trip, for example. And we are significantly more creative with a blood alcohol level of 0.75 compared to being stone cold sober. Simply put, creativity is about getting away from focused, logical thinking.

One proven method of distraction is to take a walk. “Most of what I later put to paper came to me on walks or in bed,” writes the German author Sibylle Lewitscharoff. “Never while sitting, and certainly not at my desk. Once I get to my desk, I can only refine and give final shape to what I’ve already thought, snatched from my mind’s flight, and relate it in a more or less logical order.”

Solitary walks let your thoughts flow freely. “Given enough time, your mind will often stumble across some old connection that it had long overlooked,” writes American science journalist Steven Johnson in his book “Where Good Ideas Come From:

The Natural History of Innovation” (Penguin, 2010). “And you experience that delightful moment of private serendipity: Why didn’t I think of that before?”

The “stumbling” that Johnson describes is an unmistakable sign of serendipity. Serendipity refers to the not uncommon phenomenon when you encounter things that you hadn’t been looking for, so long as you are open and receptive to it. The prototypical example is Columbus, who found America while trying to discover a new sea route to India.

The history of science is full of serendipity, especially in the pharmaceutical industry. Viagra, for example, began as a heart medication. Researchers learned that the drug had an altogether different effect only after male study participants didn’t want to give back their leftover pills.

Artificial sweeteners, too, were unplanned. Cyclamate was supposed to reduce fever, saccharine was to be a preservative, and aspartame was intended to treat ulcers. Chemists only discovered their sweetness because they licked their fingers in the laboratory.

The situation with psychiatric medication is particularly dramatic. All three major types (antipsychotics, antidepressants and anti-anxiety medications) came about by chance. We have to thank the attentive doctors who recognized the drugs’ psychological effects. With modern methods of drug discovery, they “probably never would have been found,” as pharmacologist Christian Fibiger writes. This raises the worrying question as to the value of these logic-based methods – particularly as it has



Thoughts flow freely on walks:
writer Sibylle Lewitscharoff.

been more than 40 years since a really innovative psychiatric medication has come onto the market.

Darwin or the Amateur's Advantage

“All inventions are a matter of coincidence,” wrote the German aphorist Georg Christoph Lichtenberg, “otherwise rational people could simply sit down and make inventions, just like they write letters.” Strictly speaking, that’s correct. Nevertheless, you can give inspiration a helping hand.

It’s helpful to exchange ideas with a diverse group of people. Big cities, coffee houses and interdisciplinary teams are ideal incubators of creativity. “All decisive advances in the history of science can be described in terms of the cross-pollination of ideas between different disciplines,” said the writer and creativity researcher Arthur Koestler.

This cross-pollination can also take place within the mind of an individual. It’s striking that many of the most innovative scientists had a variety of hobbies. The mind focuses on a succession of different topics, they can enrich one another. Take Francis Crick, one of the decoders of DNA – he came up with the idea of replicating DNA while he was thinking about how plaster casts are used to copy sculptures.

Or Charles Darwin. He wasn’t a biologist. He was a theologian and a failed medical student, an enthusiastic pigeon breeder and insect collector, who also experimented with earthworms and dabbled in geology. But it is precisely these amateur qualities that predestined Darwin to create

the theory of evolution, while the leading biologists of his time couldn’t see the forest for the trees.

It’s good not to be too familiar with a particular field’s conventions and proscriptions. Consequently, many scientific breakthroughs come from outsiders and non-traditional thinkers, who approach their subject without prejudice.

Consider Albert Einstein, perhaps the most creative scientist of the 20th century. His most productive phase occurred between 1902 and 1909, when he was working as a patent officer in Bern, and researching only in his spare time. He didn’t draw intellectual inspiration from colleagues in his field, but instead from a colorful circle of two or three friends, none of whom were physicists. They gathered almost every evening over sausages and cheese, read books and

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philosophized about God and the world, and had a grand old time. Later as a professor, Einstein never could recapture the productivity of his time in Bern.

His mundane job at the patent office freed him from having to produce “scientific papers in impressive quantity,” as Einstein later wrote. He cast bitter judgment on the universities: “It is, in fact, nothing short of a miracle that the modern methods of instruction have not yet entirely strangled the holy curiosity of inquiry; for this delicate little plant, aside from stimulation, stands mainly in need of freedom [...] I believe that it would be possible to rob even a healthy beast of prey of its voraciousness, if it were possible, with the aid of a whip, to force the beast to devour continuously, even when not hungry.”

State of Creativity

Since Einstein’s time, the pressure on scholars to publish, and the obligation to justify

their work, has increased dramatically. Nevertheless, universities still seem to be the best place for scholars to pursue their thirst for discovery, free of existential concerns. The economist Mariana Mazzucato recently demonstrated that the most important technological achievements of the last decades came from state research laboratories, including the technologies underpinning Apple products.

Steven Johnson shows in his book that two-thirds of the most important discoveries and inventions of the last two hundred years did not have a commercial motive. These include useful innovations such as the rechargeable battery, the nuclear reactor, GPS, the suspension bridge, the computer and the internet. The numbers suggest that most companies are not prepared to give their researchers sufficient freedom to create something truly great.

But there are exceptions. Google has long allowed its employees to dedicate 20 percent of their working hours to their own pet projects. Although not all employees have seized this opportunity, the program is nevertheless highly successful. More than half of all new projects at the company came about this way – including Gmail, Google News and AdSense, a service for targeted online advertising. The only question that remains is why other companies aren’t copying this simple, yet innovative model. □

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