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Nature, the New Rx
By Christina Dabney

In 2010, Candice Opperman’s job made her sick. She was working at Merrill Lynch Wealth Management, coming up with strategies for increasing productivity. She would condense tens of thousands of data points into one-page projections for her bosses. Depending on her math, she could make the company millions of dollars, or lose the company millions of dollars.

“Everything had to happen yesterday,” Opperman says. “Everyone was freaked out, pushing, pushing, pushing. Everything thrown at you was an emergency, and it was relentless.”

Opperman was also taking night classes at NYU Stern School of Business. She felt self-conscious not having an MBA, being one of the only women on her team, and at 29, by far the youngest. She dyed parts of her hair gray, hoping to be taken more seriously.

The weight of working full-time while going to grad school began to create so much stress and anxiety that she felt like she was being “held down by a lead vest.” She was tired all day, but couldn’t sleep at night. And when she did sleep, she had nightmares about work. She began to find it hard to leave her bed, so she worked from home, from that bed, for six months. In 2013, after three years at Merrill Lynch, Opperman’s doctors diagnosed her with burnout and insisted she go on disability.

Newly unemployed, Opperman began to retreat from life. She felt panicked when she left her apartment, so for months she didn’t, except to run along the Hudson River or relax in Washington Square Park. Nature became a crucial part of her recovery. She believes it may have saved her life.

Opperman turned to green spaces instinctively, but doctors are increasingly prescribing nature as therapy. Experimental data suggest that parks and open spaces can help heal the human brain, especially from disorders involving anxiety and stress. Bacteria in soil help the body produce serotonin, a neurotransmitter that regulates mood; and studies show that simply looking at trees from inside an office can energize a depleted brain.

“Not unlike prescription medicine for a disease, it’s a course of treatment,” says Kathleen Wolfe, a social scientist at the University of Washington who studies urban nature.

Opperman had always been an overachiever, so burnout was the last thing she expected. She got three undergraduate scholarships to NYU, and once there, not only maintained a GPA of over 3.8, but also played soccer and softball, participated in student government and statistics club, and worked part-time as an accountant for a plumbing company. After graduation, she took up karate and quickly got so good at it that she made the U.S. national team and competed in the world championships in South Africa, Finland, and Switzerland. “I always had ten things going on,” she recalls. “It shows you what kind of grit I had back then.”

Everything changed in 2006, when Opperman’s younger sister was in a near-fatal car accident. She loved her sister more than anything, and felt a new level of responsibility for her family. She helped pay her sister’s medical bills and began contributing to her parents’ mortgage. But as her family’s needs intensified, so did the pressure she felt to succeed. After she began her job at Merrill Lynch in 2010, she felt trapped, began hating work, and developed a host of painful
physical symptoms. “I was sick, but I couldn’t understand what was going on with me,” she says. “I still don’t totally understand.”

Burnout happens incrementally as a response to chronic stressors—what Christina Maslach, a psychology professor at UC Berkeley, describes as “100 little cuts”—that come from unpleasant job tasks or negative interactions with coworkers. Maslach says one of the hallmarks of burnout, along with exhaustion, is job cynicism. “No matter how positive you were about the job when you started, you are now in this very negative, take-this-job-and-shove-it kind of mentality,” she says.

People suffering from burnout also develop negative feelings about their self-worth. They begin to lose any sense of personal accomplishment, says John Mahan, a pediatric nephrologist at Nationwide Children’s Hospital in Columbus, Ohio, who has written about burnout in pediatricians. This decrease in mental health often accompanies a myriad of physical symptoms, including gastrointestinal problems, headaches and insomnia, that can leave a person feeling incapacitated.

Opperman turned pale and developed dark circles under her eyes. She got stomach ulcers and stopped digesting food properly. Twice she had to have her stomach pumped for relief from what felt like “a tumble cycle for days.” The ping of her Blackberry alerts began to cause Pavlovian panic attacks and she retreated into her own personal headspace. Close friends got mad when she canceled plans. They didn’t understand.

Time in the park helped Opperman begin to relate to people again, in a healthier way. One of the roots of her burnout was the sense that she needed to meet other people’s expectations. The musicians, dancers, and drummers who practiced or busked in Washington Square Park began to recognize Opperman as she stretched after a run, and offered a friendly wave or a quick hello. “You’re just out there enjoying the sun, enjoying the music, enjoying the energy of other people. But they’re not asking anything of you, they’re not taking anything from you,” Opperman says.

And the benefits of being in nature go even farther.

Evidence is mounting that exposure to nature helps focus attention, reduce inflammation, boost the immune system, and improve overall mental health. Nature therapy has been shown to work for many kinds of people, including veterans with post-traumatic stress, California prison inmates and kids with attention deficit disorder. Time outdoors is not a replacement for pharmaceuticals, but can work with medication to treat extreme stress disorders.

Scientists are still teasing out precisely how these benefits accrue. They believe that there are many factors at work, from soil microorganisms that people ingest when they garden to the simple calming effect of looking at running water and birds interacting with each other.

“The human brain is very old technology, and the human brain has evolved in nature,” says Stephanie Westlund, a social scientist at the University of Calgary who specializes in conflict studies and nature as recovery for PTSD, “That interaction continues to be so important.”

Over the last decade, scientists have been experimenting with a bacterium commonly found in soil that works with the bacteria in the human gut to produce serotonin, a chemical that elevates and stabilizes mood. Researchers have begun calling *Mycobacterium vaccae* “nature’s anti-depressant.” In a 2016 study, Christopher Lowry at the University of Colorado Boulder and his
colleagues found that mice injected with M. vaccae had diminished stress responses when a larger, more aggressive mouse was released in their cage.

In 2004, oncologist Mary O'Brien at Royal Marsden Hospital in London, injected the bacterium into later-stage lung cancer patients to test its ability to fight cancer. M. vaccae did not affect her patients' survival rate, but to her surprise, it lowered their anxiety about the cancer and improved their quality of life.

“Essentially, what the researchers are saying is that we should be playing in the dirt more often,” says Westlund.

Investigators in a different study did not measure M. vaccae exposure, but they did find that participants in a gardening program at a prison in California were much less likely to return to jail after being released. Their recidivism levels were 10 percent over a six-year period, compared with 64 percent for inmates who did not participate. The Insight Garden Program offered participants both “outer gardener” and “inner gardener” classes. The outer gardener classes taught them to grow vegetables and flowers. The inner gardener classes focused on fostering emotional growth through interaction with the earth and meditation. The researchers found that the men who participated felt a stronger sense of community, self-worth, and hope. In taking pride in the garden, they took pride at the prospect of their own future. Participants expressed that working in the garden gave them a new outlook on life. One mentioned that it made him feel alive.

Time spent in green space has also been linked to reduced attention problems in children. In 2004, researchers at the University of Illinois at Urbana-Champaign conducted a nationwide survey of 452 parents of children with attention deficit and hyperactivity disorder. The parents rated the effect of 49 afterschool activities on their kids' symptoms. Of all the activities, “green outdoor activities” were the only ones that reduced symptoms.

Moreover, the parents had no idea that being outdoors would have a positive effect on their children. Out of 339 responses to a question about why an activity might reduce their child’s ADHD symptoms, only two referred to the benefits of being in nature.

The University of Illinois researchers pointed to something known as “attention restoration theory” to explain their findings. This theory, developed in 1989 by Rachel and Stephen Kaplan, suggests that being in nature recharges the brain by letting the mind gently shift its focus from trees to running water to wildlife—what they termed “soft fascination.” The human brain gets fatigued after long periods of direct, focused attention on tasks. But natural objects, the Kaplans found, draw attention effortlessly and rejuvenate cognitive ability. It’s the difference between kayaking through a rough river rapid or relaxing down a lazy river in an inner tube.

“When people encounter nature for any amount of time, in a matter of minutes they feel better. It’s quite remarkable,” says Wolfe.

After four years during which she felt strong anxiety at the thought of doing any type of job, Opperman recently started working part-time as an actor in fitness instruction videos. She has also started doing aerial yoga, and performs improvisations at a Manhattan theater. To maintain her health, she runs outdoors and spends time in Washington Square Park daily, whether it’s 70 degrees or 20 degrees, rain or shine, snow or sleet. She still feels the ups and downs of depression, anxiety, and stress, and she still sometimes struggles to get out of bed in the
morning. "I often don't feel alive," she says, holding back tears. "But I go to the park for an hour, and it makes me feel human. It's everything. It's the white noise, it's the terrain, it's the stimulation of all the senses, it's the wind in your hair, it's the sun. I'm sorry it's not the happiest of endings to the story. But I've found a lifestyle that I like enough to try and that's a beautiful and wonderful thing."