Rambling On

When we walk, we naturally go to the fields and woods: what would become of us, if we walked only in a garden or a mall?
—HENRY DAVID THOREAU

The idea of solvitur ambulando (in walking it will be solved) has been around since St. Augustine, but well before that Aristotle thought and taught while walking the open-air parapets of the Lyceum. It has long been believed that walking in restorative settings could lead not only to physical vigor but to mental clarity and even bursts of genius, inspiration (with its etymology in breathing) and overall sanity. As French academic Frederic Gros writes in A Philosophy of Walking, it’s simply “the best way to go more slowly than any other method that has ever been found.” Jefferson walked to clear his mind, while Thoreau and Nietzsche, like Aristotle, walked to think. “All truly great thoughts are conceived while walking,” wrote Nietzsche in Twilight of the Idols. And Rousseau wrote in Confessions, “I can only meditate when I am walking. When I stop, I cease to think; my mind only works with my legs.”

Scotland clearly relishes its twin legacy of brains and long-striding. On the wall of the National Museum of Scotland hangs a quote from
James Watt, inventor of the steam engine (yes, the steam engine) in 1765: “It was in the Green of Glasgow... when the idea came into my mind, that as steam was an elastic body it would rush into a vacuum... I had not walked further than the Golf-house when the whole thing was arranged in my mind.” Nikola Tesla, too, invented a revolutionary engine while on a long walk in a Budapest park. Little did these men know how transport engines would hasten the demise of pedestrian life.

Anticipating the exercise/nature debate, Thoreau opined, “…the walking of which I speak has nothing in it akin to taking exercise... but is itself the enterprise and adventure of the day.” He also wrote, in his essay “Walking,” “I think that I cannot preserve my health and spirits, unless I spend four hours a day at least—and it is commonly more than that—sauntering through the woods and over the hills and fields, absolutely free from all worldly engagements.”

Walt Whitman was an even stronger evangelist on the topic, exhorting men to be more perfect and more manly by striding around outside. “To you, clerk, literary man, sedentary person, man of fortune, idler, the same advice,” he wrote. “Up! The world (perhaps you now look upon it with pallid and disgusted eyes) is full of zest and beauty for you, if you approach it in the right spirit! Out in the morning!”

If for them nature provided mental clarity and adventure, for Wordsworth it provided sanity itself. Nature, as he declared in “Tintern Abbey,” was “the nurse, / The guide, the guardian of my heart.”

It’s worth taking a short perambulation to the poet’s sensibility, not just because he was the Romantic Age’s greatest advertisement for both Scotland and for perambulating (he is estimated to have walked some 180,000 miles in his lifetime, composing poems as he went), but because he wrote so often about the ways in which his own mental health was bound to nature, and he was the first to do so in a thoroughly modern voice. Dismissing Wordsworth as a daffodil-
gazing nature poet would be a mistake. His greatest defender of recent times has been the late Yale scholar Geoffrey Hartman, who argued that Wordsworth essentially invented modern poetry (with a small assist from Coleridge), and in so doing saved the art form altogether. I’m fascinated by how Wordsworth intuited the neuroscience in both psychology and cognition. We forget today that poets were the philosophers of their time, and that the good ones changed the course of history.

Wordsworth was a child of trauma. His mother died when he was eight and his father when he was thirteen. He was sent off to live with unsympathetic relatives. Money was tight and the siblings lived apart. It’s hard to overstate the stress of these events, and at a critical time in the development of the poet’s psyche. Hartman’s own history followed a similar trajectory. In 1939, at the age of nine, he and dozens of other boys were plucked from a Jewish school in Frankfurt and sent to live in an outbuilding on a country estate in England. He remained there for six years until the war was over, when he was finally able to reunite with his destitute mother in New York.

Hartman celebrated and summarized one of Wordsworth’s central themes: “Nature does everything to prepare you, to make you immune, or to gentle the shock. He doesn’t say there is no shock, or surprise, but that nature aims at a growth of the mind which can absorb or overcome shock.”

A few months before Hartman died in 2016, I called him up. In his mid-eighties, he was still living in New Haven. I had taken a class with him in Romantic poetry at Yale more than two decades before. I wanted to see if he could once again help me through some of the material. Mostly, though, he wanted to talk about what Wordsworth meant to him all those lonely years ago, during his own period of shock. “I think the comfort of nature and the comfort of enjoying poetry and being encouraged to read, including especially
Wordsworth, certainly helped to make my exile a little bit more tolerable,” he explained. “I hadn’t enjoyed nature before England. . . . So going to England and reading Wordsworth reversed my sense of things.” Perhaps it was inevitable that Hartman would be the one to rehabilitate Wordsworth’s reputation in postwar academe.

As Hartman reminded me, Wordsworth made the perceiving self central to perception. Nature was meaningful precisely because of how it “interfused” with the mind, forming the basis for imagination. This is a central theme in the first book of The Recluse, a long autobiographic poem written in 1798. “How exquisitely the individual Mind/. . . to the external World/Is fitted:—and how exquisitely, too—/ . . . The external World is fitted to the Mind.” And sitting on the banks of the River Wye, the poet marveled at how “an eye made quiet by the power / Of harmony” offered relief from “the fever of the world.” Nature had certainly offered that relief to Hartman, and I imagine it may have in his final months as well.

Wordsworth is sometimes credited with launching the idea of tourism, but at least equal credit should go to his sister, Dorothy, who slogged many, many miles with him and wrote Recollections of a Tour Made in Scotland in 1803. It’s a great read, not only because it depicts Coleridge as wet and cranky, but because it recounts things like eating boiled sheep’s head with its hair singed off. Wrote Dorothy Wordsworth: “Scotland is the country above all others that I have seen, in which a man of imagination may carve out his own pleasures. There are so many inhabited solitudes, and the employments of the people are so immediately connected with the places where you find them.”

Both siblings were inveterate Romantics, reacting against the march of industry and commerce into pastoral landscapes. While cities had once offered excitement and revolutionary ideas to a young William, he later came to believe that they embodied disillusionment and stagnation, a “savage torpor.” Far from making
people more creative, the din and grime stifled their dreams, or at least his.

The Wordsworths were contemporaries of Jane Austen, whose *Pride and Prejudice* appeared in 1813. The notion of walking as an expression of good breeding and good health was in full swing, but it also enabled an outlet of independence rare for a woman, and both Dorothy Wordsworth and Austen’s heroines relished the act. As the essayist Rebecca Solnit points out in *Wanderlust: A History of Walking*, when Elizabeth Bennet charges out alone across the muddy downs to help her ailing sister at Darcy’s place, she is rendered both slightly scandalous and alluring.

By the early nineteenth century, it had become hard to disentangle walking and its hale enthusiasts from the Enlightenment, from Romanticism and, thanks to Thoreau and Emerson, from budding American nationalism. Walking was a philosophical act, facilitating a direct experience with divinity. It was a political act, mixing the educated classes up with the poor (who had always walked, doh). And it was an intellectual act, generating ideas and art. The ramblers of yore embraced a kind of radical common sense.

Today, when everyone from corporate executives to distracted “knowledge workers” are obsessed with creativity, walking is getting a new look. Executives hold walking meetings and even walk on treadmills at their desks (a terrible idea—go outside for a real walk!). People everywhere obsess over their step-counting wearable devices. They organize community walks. And if they are the sort of scientist I’ve been writing about in this book, they also walk with portable EEG units—or make their subjects, and inquisitive visitors like me, go out and do it for them.

The ability to see electrical waves inside the human brain was pioneered by German psychiatrist Hans Berger in the 1920s. Berger, who fell off a horse as a young soldier and was convinced his brain
then sent a telepathic message to his sister, wanted to investigate. He also believed it should be possible to watch the brain convert energy into blood flow, electricity and, ultimately, thoughts themselves. What started off as a kooky quest eventually led him to invent the electroencephalography machine, which translated signals from electrodes placed on the head to a photographic recording device. He referred to the contraption as a brain mirror, although that was optimistic. It wasn’t able to read or reflect minds but it could capture electrical signals that revealed clues about mental states. Berger learned that alpha waves, for example, appeared during rest or relaxation. Later, there would be other insights, such as that beta waves indicate active thinking and alertness, that gammas dominate during sensory processing, that delta occurs in deep sleep and so on.

Until recently, EEG was complicated to administer, requiring tight skullcaps fitted with dozens of button-sized electrodes, each wired to a large computer. A person wearing such a device looks like a shriveled sea urchin. But now, thanks to wireless technology and microprocessors, subjects can take those electrodes for a walk, as long as they don’t throw their heads back and forth in abandon (for this reason, we have no idea what the brain looks like while dancing). Although EEG remains a relatively crude measure of the average electrical output of thousands of neurons over a wide area of brain geography, it holds an obvious allure for researchers interested in environmental psychology.

In a small but intriguing 2013 pilot study, researchers asked a dozen volunteers to walk around Edinburgh for a total of 25 minutes. Their path took them through a busy urban thoroughfare, a city park, and a quiet street. The walkers wore a newfangled portable EEG that wraps just a few plastic tentacles around one’s head, made by the California company EMOTIV. The unit has only 14 electrodes and transmits real-time information wirelessly to a laptop. EMOTIV then runs the frequency signals of alpha, beta, delta and theta waves
through an algorithm that translates them to short-term excitement, frustration, “engagement,” “arousal” and “meditation level.” (This is also the same kind of unit I wore on the lake in Maine.)

When the Scottish volunteers entered the park, their brain waves showed evidence of lower frustration and arousal, along with higher “meditation” levels. Encouraged that these results aligned with Attention Restoration Theory, the researchers have now launched a much larger study with 120 senior citizens. They are calling it the Mobility, Mood and Place study.

The lead researcher, Jenny Roe from the University of York, agreed to let me have a go with the EEG unit on the route through Edinburgh. I met her neuroscience postdoc, Christopher Neale, downtown, and after a bit of hair maneuvering and saline-solution dabbing, he clamped on the headset. “You have a lot of hair,” he muttered. “That’s one difference about working with older people. They’re mostly bald.” But the device was finally transmitting, and so with Neale leading the way about ten paces in front of me, we began the walk.

It was a beautiful June day. We headed down Chalmers Street, bustling and loud with students, lorries, buses and motorbikes. This was gratifying, because I knew the noise would stress me out, and of course I knew the study design (which does not make me an ideal subject). Then we turned into the Meadows park, and I prepared to calm down. But I couldn’t. The park was jam-packed with picnickers, baby carriages, joggers. Boom boxes blared from the picnic blankets. A park maintenance truck was backing up out of a small dirt alley. Oh no! You people are all messing with my solitude! This is generally my attitude while in city parks, but it was exacerbated by the pressure to produce good brain waves. Look at the grass, I willed myself. Listen to the damn birds. A bicyclist careened past. We exited the park and walked up a quieter street, ending up near the National Museum. Neale unclenched the unit from my now throbbing head and promised to send me the results.
Months later, I got the analysis of my brain waves back from Neale. It was a bit disappointing, if not surprising. “You can see that when you transition into the green space, your excitement, engagement and frustration levels all go up,” he wrote. “These results suggest that you were more excited and engaged in the green space when compared with the urban busy section. Interestingly, your frustration levels go up and remain up. Perhaps this was due to the fact that you were walking around a new city, and technically ‘at work’ too!”

More likely, I was just, like Wordsworth, pissed off by the crowds.

In any case, I was, as Neale put it, “non-typical. Early results using the raw EEG data in our newer study in older people are promising and more in line with our hypothesis, i.e., that walking in a green setting is restorative.” Something Ruth Ann Atchley said in Moab came back to me, about how she thinks different people have different tolerances for doses of “nature.” Someone who lives in a city might be overjoyed and calmed down by a single tree, but others of us require a bigger hit. “If you’re used to Colorado, you’re going to want quiet and big views,” she’d predicted. Nature was like caffeine, or heroin. You keep wanting more.

I was, it seems, spoiled.

OR I COULD just be a terrible research subject. A few months later, I traveled to Urbana, Illinois. I went to visit Art Kramer, the exercise neuroscientist, rock climber and Harley rider whom I’d last seen fidgeting on a deck chair in Moab. It was apparent he didn’t like to sit still then, and when I saw the sixty-three-year-old’s office at the University of Illinois’ Beckman Institute for Advanced Science and Technology, it was even more obvious. As the institute’s director, he commanded a wood-paneled office large enough to accommodate a treadmill desk.

“One to one and a half hours per day,” he said, as I sized it up.
“One point seven to two miles per hour.” Kramer, who has expressive, sunken eyes, a trim gray beard, and an appearance of explosive energy modulated by sensitivity, was wearing a slightly rumpled striped shirt, and I wondered if he had just climbed off the thing.

Kramer has made many academic splashes, but a big one was when he figured out that forty minutes of moderate walking per day could protect the aging brain from some cognitive decline, especially in executive function skills, memory and psychomotor speed. To exercise, he has added a list of additional advice: have good genes, stay intellectually challenged, maintain social interactions. He has even advocated walking book clubs, which, I must say, sounds not nearly as fun as curling up on couches with dessert and glasses of wine. And thanks to his colleague and former student David Strayer, he’s taking a look at nature as a way to boost creativity. After attending Strayer’s desert confab, “I thought looking at nature would be a great idea,” he said. “We can begin to look at the synergistic effects of nature and exercise. We can try to isolate it in a lab.”

Kramer was intrigued by a recent Stanford study that showed walking on a treadmill and walking outside both increased divergent creativity, which is the kind of expansive thinking that includes brainstorming and finding more than one correct answer to a question. That study did not show that walking improved convergent creativity, the kind exemplified by the word-association task that Strayer used showing big payoffs in Outdoor Bound hikers (as a reminder of the task, find the one word that connects to all three words: cake, cottage and Swiss—the answer, in case you’re not hungry enough to free-associate it, is cheese). But the Stanford study did not look at walking in nature per se. The “outdoor” part took place on campus streets, alleys and courtyards. Stanford may be beautiful, but it is also loud with people and service vehicles, as I learned when I walked the route myself. Naturally, it was during a walking meeting that Stanford professor Daniel Schwartz and his
Ph.D. student, Marily Oppezzo, got the idea to study walking and creativity. Because they were being so dang creative on that walk.

Wanting to work in the nature piece, Kramer thought he’d dish out a few creativity tasks before and after putting volunteers on a treadmill for twenty minutes. Some would “journey” through a virtual-reality park, and some a city street. Of course, I wanted to try it. Kramer’s grad student set me up. From the get-go it was a disaster. The pretest was to create a list in a category, in this case “animals,” coming up with as many as you can in a set amount of time. I was on a roll, probably because I once lived on a game ranch in Africa. I was up to wildebeest, oryx, black rhino and water buffalo when the timer buzzed. This was a problem. In order to show that nature makes you more creative, you’re not supposed to ace the pretest.

It was time to mount the machine. The treadmill faced two enormous screens running the 3-D video of the walks. I started ambling at a comfortable pace, but the machine made a loud whirring noise in the windowless room. This did not feel like a pleasant nature environment. Not at all. The room was stuffy, the machines loud, the images on the medium-pixelated TVs glaring. VR, I was learning, is much more V than R. When I shifted my gaze from the left screen to the right, the picture quality there was so bad that the trees looked like they had been dusted with nuclear ash. Then a bright flash would burst and the image would shake and reset. I felt woozy, as I had the last time I’d gone virtual in a lab. I waved down the assistant, who managed to switch the video to 2D before I felt the need to hurl. Afterward, I took the word-associates test.

I bombed.

But, apparently, so did other people. Kramer told me later the study “was a bit of a bust.” There were problems with the lab technology, specifically the “presentation of scenes across multiple screens and mismatching auditory and visual scene elements.” Perhaps it’s time to admit it, people: nature just does the elements better.