"Get Outta Here"

Inaugural Essay by Mike Abrams

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The famous philosopher Groucho Marx once attended a dinner party that was particularly dreadful. The hostess was rude, the meal was not good, and the other guests were especially crabby to him. But he knew that, when he left, he would have to greet his hostess. As he was leaving, he was at a bit of a loss for words. So he said "Madam, I've had a wonderful evening. But this was not it."

During my brief time in this club, I have enjoyed many evenings and learned a great deal from your essays. It is my sincere hope that you will not invoke Mr. Marx's words as you complete this evening.

They used to be referred to as "Old Wives' Tales." These were the remedies passed down from generations that we made fun of due to their simplicity. Obviously nothing that does not get written on a prescription pad could possibly cure a sore throat. Why gargle with salt water when you can get your physician to write a prescription for broad-spectrum antibiotics? Nursing a cold? Chicken noodle soup is the preferred phage, according to generations of old wives. As it turns out, scientific inquiries have indeed established that chicken soup can ease the symptoms of a cold, and gargling with warm salt water can have a similar affect.

One of my mother's favorites remedies was to tell me and my four brothers and sisters to "just go outside and play." I always thought she just wanted the five of us to be out from under her feet to allow her some peace. But as it turns out, she was on to something, whether she knew it or not. I also am at peace with the fact that she wanted us out from under her feet.

In consulting with some of the senior members of Kit Kat regarding this essay, I have been instructed to respect some parameters. Among them – it should be scholarly, not simply a set of unproven ideas or feelings. Also, it should not be central to my day job. After getting my topic blessed by Jim Ginter as being far-enough removed from my day job, I turned my attention to assuring that it could be described as "scholarly." That was harder.

What I wish to explore with you this evening is the concept that being outside, whether you are immersing yourself in a bucolic setting, or simply strolling through a city park, is good for your body, your soul, your emotional, mental, and spiritual health. And for many years, people described this concept as "emerging science," or used qualifiers to describe a study's conclusions such as "*could* contribute in a positive way," or a certain natural intervention "could not hurt, but might not be of a clinical benefit." In fact, now there are rigorous studies that have allowed people to be far more definitive in their pronouncements. Technology has gotten smaller and

more portable, thus facilitating our ability to attach measuring devices to people without disrupting their movement. That has allowed us to learn that, indeed, proximity to nature is of provable benefit to the many dimensions of human health.

My interest in this topic first got piqued by two things that happened in close proximity. My wife, who is a pediatrician and a colleague of fellow Kat Dr. Terry Davis, had left a clinical journal on a table in our home, and it was opened to a page that reported on a pediatrician, Dr. Robert Zarr, from Washington, DC, who literally wrote prescriptions for patients to go outside and get a dose of nature, as part of his therapy for various symptoms and conditions. Hmmm. Not long after that, I was privileged to listen to an essay at this club presented by John Soderberg on the concept of awe. The final piece of this harmonic convergence was that, having been in this club for about a year, I began to feel the growing pressure to present my inaugural essay. And "Get Outta Here" was born.

There are those who simply do not enjoy being out in natural settings, and there are others who can't tolerate being anywhere *except* in nature. I am not someone who grew up hunting, fishing, kayaking, and generally engaged in outdoor activities such as that. But I did grow up during a time when kids were expected to find something to do outside. So we played games, built forts, traipsed through woods and pastures, and found things to do.

In June, my son Thomas and I spent four days in the New River Gorge, West Virginia, where we spent one full day whitewater rafting, another full day fly-fishing, and a half-day rock climbing. Each activity was guided by people whose obvious love of nature was palpable. They were nearly spiritual in their respect for water, trees, birds, and everything about the great outdoors. When weather makes it less likely for people like me to seek river raft guides, they pack up and go to Colorado and transform themselves into ski instructors, or guide ice fishing experiences in Canada.

Contrast that with people who have been raised in densely-populated cities and are inherently suspicious of nature. People like Woody Allen, who said "I love nature. I just don't want to get any of it on me."

Another young boy was described by his teachers as "hyperactive" in the early 1900s in San Francisco. His parents pulled him from school at age 12, gave him a camera, and took him to Yosemite. Maybe some of you have his art hanging in your home or office. But if Ansel Adams' parents had simply treated his ADHD with Ritalin or Adderol, the world would be a less-beautiful place.

Literally, since the beginning of man, human beings have been primarily rural. More people lived in rural areas, close to nature, than in urban settings. But just nine years ago, more human beings across Earth inhabited urban areas than rural areas.

Many of us urged our kids to busy themselves in nature because we believed it was healthy. Certainly there is widespread agreement that it is enjoyable, or desirable. But *healthy*? *Really*? Let's look at that.

Erich Fromm, Ph.D., was a German sociologist who studied under Alfred Weber, brother of the much more famous sociologist Max Weber. Dr. Fromm defined the theory of "biophilia," which he described as "a love of life or living systems," which is "a psychological orientation of being attracted to all that is alive and vital." Edward O. Wilson eventually popularized the concept in a more extensive exploration, and described biophilia as "the urge to affiliate with other forms of life." It theorizes that human beings are innately attracted to nature: it is why we have a vacation home on a lake, it is why we are attracted to faces of virtually every baby mammal, it is why we put plants and flowers in our homes, and why we give children stuffed animals.

There has been extensive research into the impact of nature on our health. Some of the more interesting research has occurred in Japan, home of the International Society of Nature and Forest Medicine, where the practice of *shinrin-yoku* was developed in 1982. This is a concept whereby elements of nature are experienced by a person through all five senses. 68% of Japan is protected forest, and there are specific hikes reserved for "forest bathing," in which people measure certain metrics prior to walking through forest paths, then re-measure to learn of any change their natural immersion might have caused. What was the physical impact of the smell of the wood, the sound of rushing water, or the view of the trees and other forest life?

There is a certain urgency in Japanese culture to study shinrin-yoku and similar therapies: it hosts the third-highest suicide rate in the world, and the densely-populated urban area of Tokyo is well-understood to be a pressure-cooker of professional culture.

Let's start our examination by taking a look at our friend cortisol. Cortisol is a necessary hormone produced in the adrenal gland and released in response to stress. We have cortisol to thank for our fight-or-flight instincts, but when cortisol levels are chronically high, we also have it to thank for heart disease, depression, dementia, reduction of bone formation, immune system degradation, and high blood pressure. Like many other things necessary to sustain life, such as wine, too much cortisol is a bad thing.

Cortisol levels are measurable and, if high, we can confidently conclude a person is highly-stressed.

Japanese researchers who have studied the impact of forest bathing have taken hundreds of people into the woods and compared them with people who have taken similar walks, but in urban environments. They measured a 12% decrease in cortisol levels, effectively and significantly treating their stress. Further, researchers measured a significant decrease in blood pressure and heart rate. They also subjectively report better moods and lower anxiety.

The effects of shinrin-yoku on blood glucose levels were also studied in non-insulin-dependent diabetics. Blood glucose levels measured after forest bathing were significantly decreased in every session. Interestingly, it did not matter how far the person walked in the forest, only how long they walked in the woods.

According to CDC, cancer is the number 2 killer in the United States, surpassed only by heart disease. It is widely-accepted that there are things we do that make cancer *more* likely to occur in our bodies: smoking is the obvious one, but other behaviors that can increase the likelihood of a

cancer diagnosis include poor eating habits, too much alcohol, and too much exposure to radon. If there are things that make cancer *more* likely to inhabit our bodies, then should it surprise us that there are behaviors we can engage in that make cancer *less* likely? Nature's impact on cancer diagnoses has been studied.

Researchers at the Nippon Medical School in Tokyo wondered how and whether exposure to nature impacted our immune systems, so they studied a kind of white blood cells called NK cells, or natural killer immune cells. Their theory was that, if stress is reduced by nature, then it might increase NK cells. The research team gathered a group of Japanese professionals and led them on two-hour hikes in the woods for three consecutive days. Their NK levels increased by 40%, while the control group, which took a hike of the same duration but in an urban environment, showed no change at all. The new NK level continued for a full week. A month later, the NK level was 15% higher than baseline.

Have you ever found a wooded path that is particularly fragrant? If you've ever hiked in Upper Peninsula Michigan, or Maine, you might recall a very distinct and pleasant smell. The agents that make certain woods smell good are the agents that drive up NK levels and help protect us from certain diseases. They are called phytoncides. "Phyton" comes from the Latin word for "plant," and "cide" means to kill or exterminate. Cedar trees and pine trees are especially abundant with the compound. From the trees' perspective, they emit phytoncides to protect them from being overtaken by certain insects or diseases.

It's the phytoncides, not the exercise associated with the hiking, that seems to help. The same Japanese researchers constructed a way to vaporize phytoncides into an identified set of hotel rooms. The subjects in those rooms had a 20% increase in their NK cells, as opposed to the control group, who had no change.

In the lab, NK cells that were exposed to phytoncides increased anti-cancer proteins which cause certain tumor cells to self-destruct.

I'm not asking you to conclude that a forest walk cures cancer. But I am suggesting that there are things we do that make cancer more likely or less likely to consider our bodies a friendly host, and that prolonged exposure to nature signals to cancer and other diseases that our body is inhospitable to them.

Throughout the world, governments and private benefactors are recognizing the positive social benefits of nature. Chungbuk National University in South Korea boasts the world's first degree in forest healing. Just Northeast of the university, near Sobaeksan National Park, the South Korean government is building a $100 million forest healing park that, among other things, will treat addictions.

The National Nurses Study is a very rigorous study that includes more than 108,000 women. The study has been used to examine a great many variables associated with women's health, and a group of researchers from the Harvard School of Public Health decided to look at the impact of

living in greener areas on health. They adjusted for such complicating variables as smoking and other individual health risk factors.

Researchers concluded that women who lived in the greenest areas had a 12% lower death rate than women who lived in the least green areas. More specifically, they had a 41% lower death rate from kidney disease, a 34% lower death rate from respiratory disease, and a 13% lower death rate from cancer. While many variables might be responsible for better health among those living in greener areas, researchers estimated that 30% of the improved health was explained by the impact of nature on mental health. Other benefits included less air pollution and increased physical activity.

While the most rigorous research into the health benefits of nature are relatively new, the phenomenon has been intuitively understood for centuries. In fact, biologically speaking, the human form has not changed all that much. Our brains instruct us to fight or flee large animals; remember cortisol? At our most basic level, we remain pretty much the same hunters and gatherers we always have been.

By 1699, the book "English Gardener" advised the reader to spend "spare time in the garden, either digging, setting out, or weeding; there is no better way to preserve your health."

In 1812, an American physician who is considered one of the founders of American psychiatry, Dr. Benjamin Rush, who also signed the Declaration of Independence, observed: "It has been remarked, that the maniacs of the male sex in all hospitals, who assist in cutting wood, making fires, and digging in a garden … often recover, while persons, whose rank exempts them from performing such services, languish away their lives within the walls of the hospital." It is interesting to me that, if your high social status exempts you from outdoor labors, you were unlikely to recover. In other words, the wealthy were spared the physical outdoor labor, while the poor were spared their disease.

Beginning in the 1870s, more than 50 years after Dr. Rush's death, the Quakers' Friends Hospital in Pennsylvania used acres of natural landscape and a greenhouse as part of its treatment of mental illness. During World War II, psychiatry pioneer Carl Menninger led a horticulture therapy movement in the Veterans Administration Hospital System. In the 1950s, a wider movement emerged, one that recognized the therapeutic benefits of gardening for people with chronic illnesses. In 1955, Michigan State University awarded the first graduate degree in horticultural/occupational therapy. And in 1971, Kansas State University established the first horticultural therapy degree curriculum.

We can have confidence in the research that proves nature helps keep us healthy. But there have also been strong conclusions that nature can help us heal from surgeries and other conditions. Roger Ulrich is both a psychologist and an architect, and he became curious about the impact that views of nature might have on people. He studied patients who had undergone gallbladder surgery and separated them into two groups: one set of patients had a view of trees, and another

had a view of a brick wall. The differences between the two groups were remarkable and his findings were published in *Science* in 1984. Recovering patients with a view of nature got released from the hospital earlier, needed less pain medication, and were subjectively observed to have an overall better attitude.

Dr. Ulrich's research ignited a huge amount of curiosity among other researchers and inspired dozens more "window studies." They made scientific inquiry into everything from student achievement to crime and drug use. One of the more interesting projects involved looking at government housing in Chicago. That study concluded that people living in units that viewed a large amount of natural vegetation had 48% fewer property crimes and 56% fewer violent crimes than people who had a view of asphalt. Similarly, research revealed Michigan prison inmates whose cells faced a prison courtyard had 24 percent *more* illnesses than those whose cells had a view of farmland. A Texas A&M researcher proved that people who watch images of natural landscape after a stressful experience calm significantly in only five minutes: muscle tension, pulse, and skin-conductance readings plummet. While being in nature is better and more impactful, merely viewing images of nature helps.

A great deal of research has also been done on nature's impact on creativity. Many people report they get their best ideas when working in the garden, mowing their grass, or walking a wooded path. Some researchers spent more than a decade attempting to figure out why that is true.

David Strayer, the psychologist who concluded that cell phone use while driving is as dangerous as driving drunk, developed a method to assess creativity and the impact exposure to nature has on creative thinking. Specifically, he developed word puzzles and measured people's abilities to solve the puzzles with and without exposure to nature. He concluded that creativity was increased by 50% after a few days in nature. In this study, the subjects' exposure was virtually complete immersion – they were on a multi-day canoe and camping trip. But it is plausible to believe that less exposure to nature than a multi-day immersion could also increase creativity. Perhaps that is why some of our best thinking occurs when we are either in nature or able to view it without distraction. I have always observed that some of my most creative thinking occurs when I am behind the wheel on a long drive. Though some elements of nature are missing when I'm separated from nature by a windshield, I can imagine that the natural light and other aspects of nature stimulate more creativity.

And while we are on the subject of creativity, the work of one of the celebrated artists of the 1900s allows us insight into a most interesting dimension of the relationship between nature and creativity. When you think of artists and nature, you might think of such painters as Monet, whose pictures of the outdoors are some of the most famous art in the world. You might not consider the work of Jackson Pollock particularly reflective of nature. Some critics praised his style as original, and others criticized it as "unorganized explosions of random energy." His very unique, drip-style of painting does not include seascapes, waterfalls, or sunsets. You might be surprised to learn that Pollock's painting methods actually reflect a very important element of nature.

As I was learning about Jackson Pollock's work and how it related to nature, I learned a new word: fractal. The mathematicians in the room will be familiar with the word, but let me explain it to Brent. A fractal is essentially a pattern that repeats itself on different scales. Fractals are commonly found in nature: coastlines, mountain ranges, snowflakes, lung bronchi and lightning bolts are all examples of fractals.

Fractals occur in varying degrees, and scientists apply a "D" score ranging from 1 to 2 to describe the degree to which an item reflects fractal dimension. Using EEGs to measure brain activity, scientists discovered that, when human beings view fractal patterns with D scores between 1.3 to 1.5, it lowers stress.

Extensive fractal analysis of Pollock's paintings concluded that they reflect fractal patterns virtually identical to forests, and viewing his paintings has the same calming effect as viewing more readily-accepted nature patterns. The impact of such art need only be environmental, not direct. In other words, having the paintings in your environment is enough to provide the effect, you need not stare at the work.

A head-on collision occurred on August 11, 1956, and six people, including Jackson Pollock, died. He was only 44 years old, and did not live long enough to learn that his work was reflecting fractal patterns fully a quarter century prior to their discovery.

One of the most distressing things about the value of nature on our health is how very difficult it can be to truly immerse yourself in nature should you decide you're ready for such therapy.

Are you looking for a perfectly quiet wooded path to stimulate your creativity, manage your blood pressure, and increase your NK cells? Good luck. The U.S. Department of Agriculture predicts forests declining from 767,000 acres in 1982 to 377,000 acres in 2022.

Recognizing that proximity to park land is a strong predictor of health and emotional well-being, the Trust for Public Land compiled a "Park Score" rating system that ranks the 100 most-populous cities in America according to the percent of population who live within a ten-minute walk of a park. In Ohio, Cincinnati made us proud by sneaking into the top 10 with a ranking of 10. Cleveland is ranked 45th, Columbus 56th, and Toledo is 63rd. According to the Trust, 14% of Columbus residents can stroll to a park within ten minutes.

Noise pollution is the most difficult challenge to address. In fact, researchers who have scoured the continental United States found only twelve places in our entire nation that are devoid of man-made sounds – such as planes flying over and vehicles – for fifteen consecutive minutes. Researchers concluded that the quietest place in America is in the Hoh Rainforest in Olympic National Park in Washington State. You might be surprised to learn that the second quietest place in America was Buckeye Stadium after OSU lost to Oklahoma.

And noise matters. European researchers studied the impact of noise on stress in children by comparing children who live in noisy environments with children who do not. Their research was strengthened by comparing the same set of children before and after an airport was

constructed. They concluded that noise had a significantly negative impact on reading comprehension, memory, and hyperactivity. And the impact was linear: the noisier the environment, the more significant the negative impact.

It's not the sound itself that harms us. It's only man-made, noxious, and loud sounds. Natural sounds have been proven to enhance mood and improve memory. Researchers have concluded that the three sounds human beings find most soothing are wind, water, and birdsong.

I know that all of us came of age at a time when being outside was expected, and we were not distracted by video games and cell phones because we did not have video games and cell phones. For the most part, we did not need to fear crime. For various reasons, today's children are staying inside and, as a result, being robbed of the positive impact of nature on many dimensions of their health.

In 2003 a study was published in the journal *Psychiatric Services* that reported the rate at which American children are prescribed antidepressants almost doubled in five years; there was a whopping 66 percent increase among preschool children. Between 2000 and 2003 there was a 49% increase in prescriptions for psychotropic drugs for kids, for the first time surpassing kids' prescriptions for antibiotics and asthma.

Nature immersion would not obviate the need for medication therapy for all – or even most – of the children who benefit greatly from these medicines. But certainly one of the proven benefits of nature immersion is the very thing for which so many children are being medicated.

It is notable that, if prisoners are not allowed a certain amount of time outdoors, it is considered inhumane. But in fact, prisoners are spending more time outside than the average American child. The average kid in our country spends 7.5 hours every day in front of a screen, inside. This does NOT include time spent in school. Children in the US and the UK spend half as much time outdoors as their parents did when they were growing up.

Researchers measured the amount of nature proximal to homes of rural children from third to fifth grades. They learned that children with more nature near their homes received better ratings than peers with less nature near their homes on measures of behavioral conduct disorders, anxiety, and depression. So even in settings where nature is relatively high, more is better.

Richard Louv, in his book *Last Child in the Woods*, coined the phrase "Nature Deficit Disorder" to describe the impact of a lack of exposure to nature on children. Like other researchers, he reports that it contributes to obesity, attention deficit, and depression. His work inspired the "Leave No Child Inside" movement, which has caught the attention of policymakers across the country and a few bills have been passed. In 2007, the New Mexico state legislature approved the Outdoor Classrooms Initiative which will increase outdoor education. Washington state's version of the law allocates $1.5 million a year to outdoor programs working with underserved children. And at the national level, the No Child Left Inside Act, introduced in the House and Senate, is designed to bring environmental education back to the classroom and, indirectly, to get more young people outside.

There are examples of people right here in our own community who are innovating and offering opportunities to reflect nature in previously pretty sterile environments. A group of young mothers established Red Oak Community School in Clintonville just last year as an alternative to more traditional public elementary school. Students at this school are given a full hour of recess in the morning, and another full hour in the afternoon. During recess, they are outside in the woods, playing and asking questions about trees and other elements of nature.

I'd like to conclude with a story.

Stacy Bare is a true American Hero. He joined the military in 2000 after finishing college at the University of Mississippi. He served in Bosnia and Iraq, and was presented the Bronze Star for his heroic service. Following his return, he had many of the difficult symptoms that plague so many others returning from service. He describes himself as a full-fledged alcoholic who could not repress trauma. He had convinced himself that the only way to turn off the demons that haunted him continuously was to end his life.

He confided his suicide plans to a friend with whom he had served in Baghdad, who said "come climbing with me." It is not hyperbole to say that rock climbing saved his life. In 2014 he was named National Geographic's "Adventurer of the Year," for the work he does with fellow veterans. He founded a group called Veterans Expeditions, and he has helped hundreds of veterans struggling with PTSD by taking them on outdoor experiences. They have climbed mountains, hiked forests, and fished rivers. Many attribute their healing to the outdoor work Stacy Bare initiated with them.

There are similar organizations that target women veterans exclusively, and many speak to how the programs saved them from despondency and got them off drugs, both prescription and recreational.

Stacy Bare has partnered with a researcher and completed a study that concludes that veterans experience a 35% reduction in PTSD symptoms following a single two-day rafting trip. Academic journals are reviewing their study and they expect it to be published.

As I wrap up my inaugural essay, I am reminded of a student of Zen, which emphasizes meditation and self-control. The student asked his Zen mentor: "How is it that you see so much?" The mentor replied "It's easy. I close my eyes."

I choose to believe that those of you who might have closed your eyes during these past minutes have done so in order to see more.

It has been my distinct privilege to share my interests with you, and I look forward to our discussion.