Trees and the Human Spirit

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For all living creatures and the amazing places where they live

TABLE OF CONTENTS

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ABBREVIATIONS

ADHD	attention deficit hyperactivity disorder
ART	attention restoration theory
BMI	body mass index
CCS	carbon capture and storage
C&NN	Children and Nature Network
CPTED	Crime Prevention through Environmental Design
EE	environmental education
EfS	education for sustainability
FoAT	Forest of Avon Trust
FS	Forest School
FSA	Forest School Association
GfW	Good from Woods
GIS	Geographic Information System
NBS	nature-based solutions
SDGs	Sustainable Development Goals
SRT	stress reduction theory
SUD	sudden unexpected death
UK	United Kingdom

US	United States
UN	United Nations
YLP	Young Leaders Project

INTRODUCTION

"Keep a green tree in your heart and perhaps a singing bird will come."
- Chinese proverb

From the title, you might assume that this book is about trees. While trees and forests are indeed discussed, the book is actually about the connection between humans and trees, or more broadly about the connection between humans and the rest of the natural world. So why didn't I choose "Nature and the Human Spirit" as the title of the book? The answer lies in the way trees are physical–I can touch them, hear the leaves rustling, see birds building nests on the branches, and sometimes eat the fruit and nuts the trees produce. Nature is more abstract. It's a construct, or idea, invented by humans. Nature is often ambiguous, and the concept plagued with contradictory ideas.

There was a time in human history when we experienced nature all around us and in us. Once we started to live in a more manufactured rather than natural environment, we noticed the difference in our surroundings and felt a need to name that which was being replaced. So we called it "nature." Once named, nature became something separate from ourselves and something we decided we could–and perhaps, should--manage. Nature separate from self became an "it" or a place to go to. This separation made it possible for one little girl to say, "I've never been to nature."

Humans didn't invent trees; trees are what they are–amazing, marvelous, generous, strong, and resilient. We can learn a lot by becoming more familiar with trees, more in tune with what they are and more appreciative of their contributions to the ecosystems of which they are a part. An ecosystem is a community of living and nonliving things interacting with each other in a given area of the environment.

Our lives can be enriched through a closer intimacy with trees and a relationship grounded in appreciation and respect. Of course, the same can be said for nature; but nature, for many of us, has become abstract.

But why focus on trees versus frogs or rose bushes or something else? Trees have more a presence in our lives than many other aspects of nature. We also see something "human like" in trees: we stand upright, have limbs, come in different sizes, and have fluids circulating through our systems. It's not surprising to find that many poets and essayists, including

Gretel Ehrlich, have compared humans to trees. Many of us are also familiar with the "tree pose" as one of the most basic poses used in yoga. The tree pose reflects the grace and steadiness of a tree. It helps yoga practitioners become more centered and balanced. I like to look at a tree outside my window as I stand in tree pose during my yoga practice. Focusing on the tree takes me outside of myself – a place where it's easier for me to breathe slowly and to experience a sense of balance and calmness. My hope is that as you read this book and focus on trees and forests, you'll experience a sense of kinship with them and find in this relationship a deep sense of self as being connected to all other living things.

This book is not a scientific text, yet it includes many scientific facts about trees and forests. This book is not a philosophy or poetry book, yet it includes philosophical discussions and references to poetry. This book is not a curriculum guide for teachers and parents, yet it offers ideas on how to foster children's development and learning though deeper contacts with nature. This book is not a self-help book, but the insights and ideas presented can help people find meaning, purpose, and joy in their interactions with trees, forests, and the entire world of nature. The book includes personal narratives, research summaries, and stories about champions working to save our trees and forests. The intent of the book is to increase awareness of the wonder of trees and forests, but, more importantly, to inspire wondering about the human connection with trees, forests, and the amazing world in which we live.

How we view trees matters. We can look at trees through a scientific lens, a poetic stance, or a religious perspective. We can consider trees as resources or companions. Choosing just one of the possible ways of viewing trees will certainly limit our understanding and appreciation of trees. That's why this book looks at trees through a multi-disciplinary lens, and that's why this book invites--not only an appreciation of--but also a kinship with trees. Trees do more than nurture our physical bodies; they nurture our spirits and our souls, as well.

CHAPTER ONE

THE AMAZING LIFE OF TREES

"Trees seem to accomplish their feats so effortlessly." (Dillard 1998: 113)

The heartbeat of a tree

I was fortunate to grow up on a farm where I was close to many living things--the chickens in the coop, the cherry trees in the yard, the cows in the barn, and the tomato plants in the field. We depended on these plants and animals for our food and income, but I discovered early that these living creatures were more than just things to be used. They were worthy of respect and care. The most memorable lesson came in a chicken coop, where I spent some time with my Dad and hundreds of baby chicks during a thunder storm. Dad was concerned that the storm would frighten the chicks and that they might smother each other as they huddled together in corners of the coop. I remember holding a baby chick in my hand and feeling its tiny heart beating. I realized, at that moment, that the chick and I shared the magical experience of being alive.

Many years later, I was teaching an environmental education course at Bowling Green State University in Ohio. I had given the students an assignment to write an autobiographical essay about a memorable nature-related experience from their childhood. One student wrote about hitting a small tree with a big stick he had been carrying. He said he didn't know why he hit the tree–it was just something to do. Yet, he hit the tree hard enough to break the trunk and then watched as the tree "bled" water. He realized, at that moment, that he and the tree had something in common--that both were living beings.

I asked a biology professor about the possibility of water actually flowing from the trunk of a tree that had been broken. I was assured that this could indeed happen, more so at certain times during the year than at other times. He explained how trees have a system something like our veins that moves water, nutrients, and food between the leaves, trunk, and roots. He encouraged me to hold a stethoscope up against a thin-barked tree so that I could hear the inner workings of a tree. I did so, and was

truly amazed. Trees don't have heartbeats, of course, but the deep rumbling sound that I heard wasn't too unlike the sound of my beating heart.

This chapter is about trees and the amazing way in which they live. My hope in writing this chapter is to deepen an appreciation of and respect for trees. The student who whacked the tree did it out of thoughtlessness. Until he saw it "bleed," the tree held no special meaning for him. Perhaps by learning more about trees, we'll also begin relating to them in more caring ways.

The generosity of trees

Trees and their amazing water systems

Irrigation systems from many centuries ago indicate that people have known for a very long time that plants need water to live and grow. What's amazing about the water systems in trees and some other plants is that they use so little of the water they absorb for their own growth and survival. Most of the water passes through the plants into the atmosphere, through a process we refer to as transpiration. Without transpiration, many other living things could not survive. Transpiration adds moisture to the atmosphere, which, in turn, contributes to rainfall. We can't see it, but "the leaves are like 'tiny fountains' misting and cooling the air" (Ackerman 1991).

One of the key features of water which makes transpiration possible is the way water molecules stick together. As water evaporates through the leaves or other parts of a plant, a negative pressure (or suction) exerts a pulling force drawing water up through the tubes of the plant. This pulling force is strong enough to work against the force of gravity! Jill Jonnes (2017), in *Urban Forests*, tells us that if we had x-ray vision and could see the water as it flows through the tiny tubes, we would be awed even more by the exquisite beauty of it all. We would see, she says, "a fabulous slow-motion aquasculpture . . . . millions of shimmering threadlike columns of water."

Transpiration is really amazing. The process not only helps trees survive, but contributes in a vital way to the well-being of other living systems, as well. And it's a totally sustainable system, in that the resources used in the process are far less than the contributions the system makes to the ecosystem. Trees are indeed generous, producing far more than they consume.

Trees and the air we breathe

In addition to adding moisture to the atmosphere, trees also add oxygen. Without this oxygen, we would not be able to breathe, and Planet Earth would not be habitable. While trees don't actually make oxygen, they do contribute immeasurably to the production of breathable air. This task is accomplished through photosynthesis, a process driven by the power of the sun. The word "photosynthesis" literally means "to put together with light." Trees use the sun's energy to release the carbon from carbon dioxide, combine it with water, and make carbohydrates and sugar which serve as food for the tree. The excess water not used in the process contains oxygen which is released into the atmosphere. Photosynthesis, then--like transpiration--benefits both the tree and the ecosystem of which it is a part. "If we breathe, it is because the oxygen-producing capacity of our photosynthetic planet-mates still persists" (Meine 1992: 135). While some of our "planet-mates" (the trees) produce the oxygen we need to breathe, it's also a profound thought to consider that we share breath with all other living things. And in some Indigenous cultures, everything that breathes is believed to have a soul (Salmon 2000).

Trees also benefit the ecosystem–and us--by reducing air pollution. They do this by intercepting particulate matter on plant surfaces and absorbing gaseous pollutants through tiny openings (stomata) on their leaves. Air pollution is a problem affecting not only human health and

well-being but also the health of entire ecosystems. For humans, air pollution is associated with serious pulmonary, cardiac, vascular, and neurological health problems. Outdoor air pollution may lead to over three million premature deaths per year worldwide (Lelieveld et al. 2015; Nowak et al. 2018).

If the presence of trees can support health and longevity, would the loss of trees increase premature mortality? One observational study addressed this question. The study was conducted in an area where emerald ash borer infestation led to widespread ash tree dieback. The researchers found an increase in deaths related to cardiovascular issues or respiratory illness in the areas of tree loss. The impact was greatest in wealthier communities, due perhaps to the likelihood of wealthier communities having more ash trees that died from the infestation (Donovan et al. 2013).

Trees and the food they produce

The leaves are the tree's most productive food factory. Many leaves are broad and flat allowing them to catch as much light as possible, which is used in the making of food. The leaves' arrangement on a branch–spread out versus overlapping--also puts them in a favorable "light-catching" position. While some of the sugars that trees produce are used for their own growth, trees also store food for other purposes – often advantaging other creatures. Some of the stored food is used to make blossoms which provide nectar for hummingbirds, bees and other insects. The blossoms make way for fruit, which also serve as food for other creatures. Other parts of the tree are used for food, as well. Ants find sugary food in galls; beavers, rabbits, and rodents eat bark; squirrels eat nuts; bears eat fruit; and deer eat leaves. Many other animals also look to trees as an invaluable part of their diet. Of course, humans, too, eat fruit and nuts from trees.

Other ecosystem services trees provide

In addition to the goods they produce (food, oxygen, moisture, wood, etc.), trees also provide many other ecosystem services. Such services can be direct and indirect, social and biological, and involve all or different parts of a tree. Far reaching roots, for example, hold soil in place and fight erosion. By absorbing rainwater, trees also reduce stormwater runoff. This helps the ground water supply recharge and prevents flooding. Reducing stormwater runoff also lessens the transport of chemicals and sediment

into streams, which leads to water pollution endangering the lives of many living things.

Traditional stormwater management–especially in urban areas–relies on gray infrastructure, such as pipes to collect and convey stormwater to wastewater treatment facilities or into surface waters. Many cities, today, are exploring green versus gray infrastructure to manage stormwater. They do this by installing rain gardens, bioswales, and permeable pavements. Scientists today are also suggesting that arboriculture–the cultivation of trees and other woody plants–be considered a viable stormwater control measure. In addition to intercepting incoming precipitation, trees could also remove water from the soil through transpiration. Additionally, trees could bolster the performance of other green infrastructure technologies (Berland et al. 2017). A review of 14 studies representing five continents strongly supports this idea. The review provides convincing evidence that landscapes with trees can reduce rainwater runoff and improve the quality of the runoff water (Livesley et al. 2016).

Trees also benefit humans and ecosystems through a "carbon capture and storage" (CCS) process. As global warming speeds up, the importance of removing carbon from the air becomes increasingly important, as carbon is a contributor to the warming of the planet. Carbon needs to be pulled out of the atmosphere and put into long-term storage elsewhere. While researchers are looking for high-tech ways to capture and store carbon, trees have been doing this for almost 350 million years. One half the dry weight of wood is carbon. Increasing the amount of trees, then, has the potential to slow the accumulation of carbon in the atmosphere (Brack 2002, Nowak 1993).

Of course, we all know that trees provide habitat for a variety of creatures, such as birds and squirrels. But when pressed into naming creatures that live in or under trees, we may be certain about only a few. This may be due to the fact that we never–or very seldom--see most of the creatures living in, on, or under a tree-like the huge number of microscopic worms and the thousands or millions of insects. Yet, not all animals living under a tree are tiny. Some rabbits and other burrowing animals can live under trees, as well. The roots of the tree keep the ground from collapsing into their burrows. Other arboreal animals live so high in tree canopies that they're only seen by tree-climbing researchers and adventurers. Even the shrub-like trees that grow in the tundra provide habitats for animals. Cavities in their branches provide refuge for animals such as marmots, rodents, and chickarees.

The way trees grow

Bamboo can be relentless–or as some might say--they show aggressive behavior. While scientific studies attest to the amazing growth rates of bamboo, so can backyard maintenance. Bamboo was showing up, unwelcomed, in my daughter's yard in Texas. While a fence separated her yard from the neighbor's, that was no deterrent to the bamboo. Roots made their way under the fence and soon new shoots were showing up in flower beds in my daughter's yard. My son-in-law took action. He dug a trench, a foot wide and three feet deep. He filled the trench with concrete. Certainly that would stop the bamboo. But it didn't. Within a week or so, new bamboo shoots were showing up again in the flower beds.

Bamboo may look like trees, but they're really a form of grass with culms (canes). For some people, what makes bamboo so appealing is the fact that, until they're mature, you can see a difference in their growth every day. Bamboos grow new plants from the existing bamboo plant through underground rhizomes or stems. Rhizomes look like underground culm canes with nodes and internodes. These nodes put out lateral shoots and roots which do grow quickly. Some types of bamboo can grow two to three feet per day!

Growth rates and unusual growth patterns

While bamboo grow fast, some trees grow even faster. The Empress tree can grow up to 15 feet in the first year. Empress trees are native to China but have been introduced in other parts of the world. People tend to love the fact that they grow so quickly. But, like bamboo, Empress trees (sometimes called Princess trees) tend to be very invasive. They quickly shade out and outcompete native plants for resources, such as water and nutrients. So while Empress trees produce pretty purple flowers and grow quickly, their presence in the wrong places can be problematic. Thus, while we might turn to planting more trees to help combat climate change, it's important to plant trees in the right place–where they can help versus harm other ecosystems.

Eucalyptuses are also fast-growing trees; some growing almost 125 feet tall in only three years. With such rapid growth, it's not surprising that they're also the world's tallest trees. One type of eucalyptus–the eucalyptus amygdalin–grows as high as 480 feet. Eucalyptus, however, aren't universally loved or good for the environment. Because eucalyptus are fast growing, they are sometimes planted more for commercial than ecological benefits. Eucalyptus oil is a valued product for its effectiveness

in relieving a range of respiratory conditions (such as asthma and bronchitis), but when planted as monoculture forests, eucalyptus can cause harm to the environment. If planted in the wrong place, eucalyptus can out-compete native plants (Lorentz et al. 2015, Musengi and Archibald 2017) and thereby diminish the diversity so important to healthy ecosystems.

While all trees grow "reaching for the sky," the Walking Palm also grows laterally. The Walking Palm stands on stilted roots. Unlike other types of trees which stand rooted in one spot, the Walking Palm can strategically regrow when its present position becomes compromised. If the soil erodes, the tree grows new, long roots and moves to a healthier place. As the roots settle in new soil, the tree bends toward the new roots, lifting the old roots into the air. In this way, the new growth drags the tree along to the new location. While the process of relocating can take several years, some palms can walk a few centimeters in just one day. Scientists are now looking to the Walking Palm as a potential partner in cleaning up contaminated or deforested areas in some parts of the world. They rely on Walking Palms to regrow their roots and move their trunks away from the debris.

The banyan tree also has an unusual growth pattern. The bayan spreads by forming prop – or pillar – roots. These roots grow down from the banyan's branches. While it's not unusual for a banyan to have hundreds of prop roots, one banyan in India has more than a thousand such roots. This banyan has been described as a "one-tree forest" (Burnie 2015: 13).

While all trees growing in the right place benefit humans and ecosystems in a variety of ways, large, old trees provide the most benefit. Large trees are much more effective than small trees in minimizing or preventing runoff, in capturing and storing carbon, in regulating temperatures, and in providing habitat for other species. Could many smaller trees offset the value of one large tree in terms of biodiversity? One study tested this idea and found that "many smaller trees will not be suitable habitat compensation for all species" (Le Roux et al. 2015: 558). Large trees provide certain structural elements (such as hollows and woody debris) that smaller trees can't provide. For this reason, large trees are sometimes referred to as "keystone structures" (Le Roux et al. 2015).

Large trees in some places, however, can also lead to what some might refer to as "ecosystem disservices" (Lyytimäki and Sipilä 2009). Tree roots breaking through concrete sidewalks and streets can create dangerous and expensive-to-fix situations. There's no doubt that tree roots are strong. They not only exert tremendous pressure, they also have impressive holding power. Anyone who has ever tried to remove the roots

of a tree or bush from their yard can attest to the strength of this holding power.

Resilience and adaptation

"Resilience" might be one of the best descriptors of trees and how they grow. Trees grow in hot, dry deserts, in icy arctic lands, and in salty swamps. Some trees seem to grow out of rocks. Generally, the seed finds a little nook in the rock, and then--with water and a little soil–the seedling becomes established. In some instances, the root will break the rock apart, allowing the root to find the soil underneath or behind the rock. Once established, it becomes almost impossible for the tree to be blown away. Other trees spread wide mats of roots, sometimes covering acres of land. They, too, aren't likely to blow away. The underground root system of some trees occupies an area fairly equal to the crown of the tree. Other trees, however, may have much larger root systems-sometimes occupying an area four to seven times the surface area occupied by the crown of the tree.

The life span of trees is also impressive, with many trees living for hundreds or even thousands of years. Their odds of surviving seem to actually improve as they age. In fact, the first few months of a tree's life are much more precarious than the years or centuries which follow (Burnie 2015). Most trees start out as seeds; and it's truly amazing how many seeds a tree can produce. A fully-grown birch tree, for example, can produce a million seeds per year; a single oak about 50,000 acorns per year (Burnie 2015). Some seeds –including the seed inside an acorn--are well protected. Other well-protected seeds reside inside pine cones. These conifer seeds remain inside the pine cone until they're ready to sprout and the conditions for sprouting are right. For some, "right conditions" include dry weather. Pine cones open and release their embedded seeds on dry and windy days for long-distance dispersal. They fold their scales when it rains to prevent seeds from short-distance dispersal (Song et al. 2015).

Trees are also amazingly adaptive. Mangroves, for example, grow in salty, muddy places (mudflats) where fresh and salt water come together. Most trees can't grow in such permanently waterlogged ground because the soil is too soft and unstable to anchor a tree. Mudflats are also very low in oxygen. But mangroves have two special kinds of roots which give them the ability to survive in such conditions. Stilt-roots grow like an arch from the mangrove's trunk and anchor the tree in mud. Breathing roots grow up through the mud and are exposed to air at low tide. This adaptation allows them to collect the oxygen they need to survive.

Mangroves can also serve as partners in combating climate change. Excess amounts of carbon dioxide in the atmosphere – from such sources as car emissions – contribute to climate change in a negative way. The ocean and coastal ecosystems can store large amounts of this excess carbon. Carbon captured and stored by the ocean and coastal ecosystems is referred to as "blue carbon." Mangrove forests play an important role in this process. They accumulate more carbon from the atmosphere than they release. They can store this carbon for long periods of time, perhaps millions of years. They thus serve as blue carbon sinks which help reduce the amount of carbon dioxide in the atmosphere. While mangrove forests are much smaller in size than many other forests, they sequester carbon at a much faster rate.

While the tundra is sometimes referred to as a treeless plain, some hardy trees (such as birches and willows) have found ways to adapt to the harsh conditions. Due to frozen ground beneath the permafrost, their root systems are shallow. Yet, they survive. They get their nutrients from the upper layer of soil which thaws during a short growing season. Arctic trees also tend to grow low to the ground, where they are less exposed to the icy winds. While most willow trees are fairly tall, the arctic willow usually grows no more than eight inches tall. Other artic willows grow prostrate, looking more like a carpet than a tree. According to Nadkarni (2008: 95), they look "as if they are crawling along the ground in very slow motion."

One of the ways trees in the desert adapt to the arid environment is by having narrow versus broad leaves, as narrower leaves allow for less evaporation. Narrow leaves can be amazingly long. The leaves of the African raffia palm, for example, can be as along as 83 feet (25 meters). The root system of desert trees also help them adapt to dry conditions. Some desert trees have both shallow and deep roots. The shallow roots capture the limited rainfall before it evaporates; the deep roots may travel 100 or more feet downward to tap into the permanent water table far below the surface. Some desert trees – like the baobabs--capture water during short rainy seasons or sporadic rainstorms and then store it in their swollen trunks. Some of their trunks are wider than the tree is tall and can hold up to 30,000 gallons of water (Nadkarni 2008). In a drought, the tree shrinks as the water supply is used up.

There are many words we could use to describe trees and the way they grow. Words such as extravagant, fantastic, intricate, gratuitous, and amazing come to mind. Annie Dillard, in her poetic way of writing about trees, calls attention to how "they extend impressively in both directions, up and down, shearing rock and fanning air, doing their real business just

out of reach. . . .They have their sturdy bodies and special skills. . . . they abide" (Dillard 1998: 88).

Trees as communicators

Many of us know that our pets – and maybe even other animals – "speak" to us and to each other. Can plants do the same? Some researchers say "yes" and have documentation to back this up. One reason why people tend to be skeptical about plants' ability to communicate rests in our incomplete understanding about what it means to communicate. Communication involves a lot more than just talking or using gestures to give messages. There are, in fact, many different ways to communicate ideas, information, and feelings. Plants know how to do this. As communicators, they emit, receive, and decode information. They do this – not through language, per se – but through chemical substances. When attacked by pests, many plants emit chemicals that alert other plants in the vicinity. In addition to sending out an alarm signal, they also share information about the nature of the predator. The other plants respond by putting up defenses against the specific pest at hand. What's even more surprising is the fact that the alarm signal sent by the plants under attack also lets natural enemies of the pest (usually insects) know what's going on. In other words, plants not only communicate with each other; they communicate with insects, as well.

While the general public may be surprised to learn that trees and other plants communicate, more and more scientists no longer doubt the reality of this phenomenon and are now looking deeper into how this occurs (Simard 2018, Mancuso and Viola 2015, Wohlleben 2016). A June 2018 issue of *National Geographic* includes an article on "Talking Trees" (Chung and Williams 2018). Drawing on the work of forest ecologist Suzanne Simard, the article describes how Douglas Fir forests in Canada form underground symbiotic relationships with fungi to relay stress signals and share resources with one another. It's through this underground web that trees and plants really do communicate and interact with each other. The sharing of resources through this network seems to be purposeful – as evidence shows that the fungi move carbon, water and nutrients between trees, depending upon their needs. "Mother Trees"--large, older trees that rise above the forest--are at the hub of a forest's underground network. "Mother Trees" are connected to all the other trees in the forest by fungal threads. Some evidence indicates that when a Mother Tree is cut down, the chances of younger trees in the forest surviving are substantially diminished (Simard 2018).

Peter Wohlleben (2016), in *The Hidden Life of Trees*, describes ways in which trees feel and communicate. His research shows that trees form highly communicative social networks. They care for their sick; they nurse their young; and share valuable information and resources with each other. Wohlleben's research is consistent with the findings of Simard (2018) which show that trees communicate through a vast fungal network twined around their roots. Wohlleben found that tress use scent as well in communicating with each other.

Stefano Mancuso has also conducted research on how trees communicate. In *Brilliant Green*, Mancuso and journalist Alessandra Viola (Mancuso and Viola 2015) share information about plants processing information, sleeping, remembering, and sending messages to one another. They clearly demonstrate that trees and other plants are far from being passive organisms. They have the ability to tap into an information network of other plants and certain animals to obtain small services, including assistance in protecting themselves and reproducing.

While the understanding that trees communicate is now supported by scientific evidence, some Native peoples have always known this. According to Native American wisdom, trees "talk to each other, and they'll talk to you if you listen" (Nesburn and Mengelkock 1991, quoted in Stout 2013: 21).

Reflections – The Giving Tree

We can look at trees and be awed by their size, their strength, their adaptability, and the amazing way in which they communicate and produce their own food. What awes me the most about trees, however, relates to the contributions they make to the world around them. Trees give far more than they take, and they do so with such graciousness and generosity. They ask for so little in return. As I reflect on the generosity of trees, I think of "The Giving Tree," a children's book by Shel Silverstein (1964). The story is about a boy and his relationship with an apple tree. The boy loved the tree and enjoyed the many gifts the tree had to offer – the apples, the shade, and even the friendship. A sense of kinship developed between the boy and the tree; and the tree was happy. As the boy matured from childhood to adulthood, the tree continued to give – it gave its apples to be sold for money and its trunk to be used as a boat. By the end of the book, the tree is just a stump and the boy has grown into an old man who is weary. The tree offers its stump as a place to sit. While some people see this book as a one-sided story about giving – with the tree doing all the giving--others focus on the life-long relationship between the tree and the boy and celebrate the tree's extraordinary capacity to love. One example of people's response to the generosity of the Giving Tree can be found on a tree stump in Oakland, California. The stump was carved into the shape of a chair and the last words from the book printed on the wood: "Come, boy, sit down. Sit down and rest. And the boy did." Perhaps it would be well for all of us to find a stump and sit down awhile to reflect on the wonders of the natural world and our relationship with it.

I once listened to the heartbeat of a baby chick and realized then that the chick and I were both living, breathing beings. Listening to that heartbeat gave me a new understanding and appreciation of how we shared a common experience of living together on an amazing planet. We now know that we can also listen to trees. They not only communicate with each other, they also have messages for us – messages about being a part of a larger whole, messages about strength and resilience, and messages about generosity.

Trees are truly amazing, and what they have to offer are gifts which can nourish our bodies, minds, and souls. Just as we've learned to tap into trees for the delicious maple syrup, we can now tap into the wisdom of trees to help us mitigate global warming. We can also tap into trees for the aesthetic and spiritual nourishment they provide so generously.