

THE WISDOM OF TREES

By Manjula Nanavati

"Trees are sanctuaries. Whoever knows how to speak to them, whoever knows how to listen to them can learn the truth. They do not preach learning and precepts, they preach, undeterred by particulars, the ancient law of life."

- Herman Hesse⁽¹⁾

There is a relative uncertainty as to when our earliest human ancestors evolved on earth. But it is certain that by that time, a myriad variety of plants and trees had already been thriving on the planet. The very structure of a tree, with its trunk segmenting into branches, twigs and leaves, is a physical manifestation of the philosophical concept characterizing the relationship between the universe and the One; multiplicity from Unity. The tree's concealed roots further extend the metaphor, of unity springing from a hidden origin or source. Even those of us who do not share this perception cannot help but experience a sense of awe, perhaps even an intuitive reverence, in the presence of a forest of these majestic giants clothed in their silent, steadfast, resilient beauty. Older than man himself, trees have been integral to myths and folklore in almost all cultures as symbols of solace, strength, abundance, and immortality.

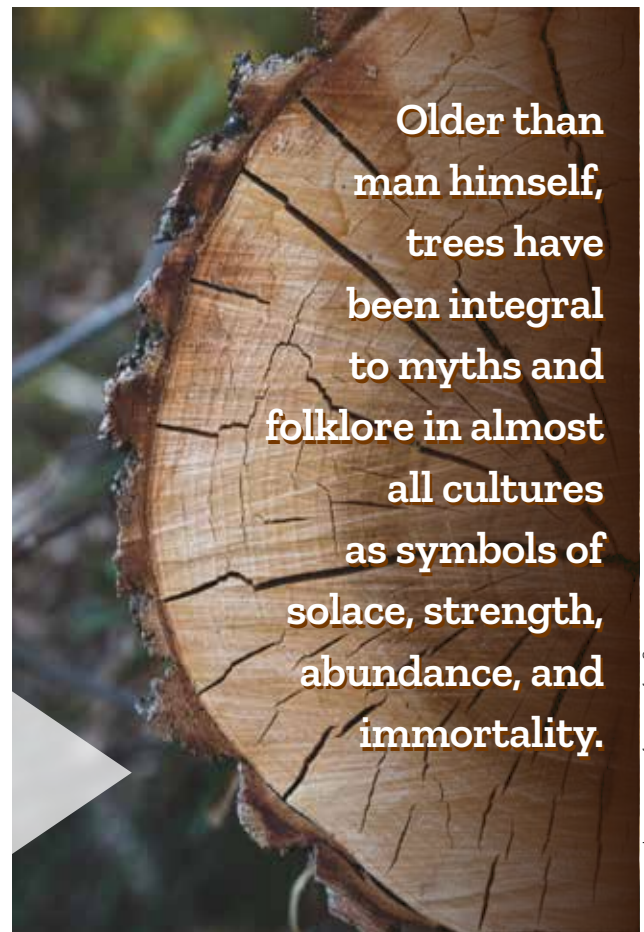
Could the ubiquitous presence of these symbols across so many cultures and traditions suggest an affiliation between human beings and these arboreal beings that transcends time and geography? Is there a synergistic and collaborative relationship in the fact that while they can consume carbon dioxide and give off oxygen, we do the exact opposite? Living as we do in cities of cement, steel and glass we may be losing our appreciation for the immense contribution trees continue to make to our lives, in terms of shelter, food, medicine, fuel, while balancing the very ecosystem of the planet we call home. Well before *Shinrin-Yoku*, or forest bathing, developed as a therapy to boost the immune system in the 1980's, the benefits of spending time among trees was well

documented by philosophers and poets. Walt Whitman saw them as 'an unheralded source of moral wisdom.'⁽²⁾ Herman Hesse called them the 'most penetrating of preachers.'⁽³⁾

"In every walk with nature one receives far more than he seeks."

- John Muir⁽⁴⁾

A single tree is usually home to a universe of life from roots to branch tips. Yet they themselves can give the impression of being separate, silent sentinels. Scientists are only now beginning to discover that trees can see, learn, communicate, and display social



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behaviour, forming alliances to nurture and protect damaged or dying neighbours.⁽⁵⁾ If consciousness is defined as the quality of sentience, the capability of sensing and responding to the environment, then these magnificent entities certainly qualify. If the level of consciousness depends on the ability to process, differentiate, integrate and communicate information, then it is evident that consciousness is not exclusive to humanity.⁽⁶⁾ And if we believe that age and experience can contribute toward wisdom, then trees with lives that span hundreds and even thousands of years, perhaps have much to communicate about life, if we could but learn to listen.

A Sense of Time

In those latitudes that trees shed their leaves to hibernate for winter, how do they differentiate between an unseasonal warm spell and the definitive arrival of spring? Scientists working on fruit trees have documented evidence that they wait for a certain amount of consecutive warm days, before beginning the process of 'awakening'. Beeches, for example, start

growing new leaves only when there is at least thirteen hours of daylight a day. This astonishing evidence suggests that trees can "see", or register the presence of light, and use some kind of memory to compare day lengths and count warm days!⁽⁵⁾

Information Exchange

Trees "speak" to one another quite clearly through scent, warning of danger. Scientists in the African Savanah found that Acacia trees that giraffes were feeding on, began pumping toxins into their leaves as a bitter and effective deterrent, while releasing ethylene gas to warn neighbouring trees. The fore-warned trees begin to pump toxins into their leaves, in turn warning other trees down wind. There are trees that can recognize the saliva of different attacking insects, fighting them off by producing compounds to "call" specific predators to devour the harmful insects.

Communication can also take place underground. The roots of a tree can extend far beyond its crown, criss-crossing, and intersecting with those of its neighbours. In

1990 Suzanne Simard discovered that fungi attach themselves to root-tips releasing thin filaments, or hyphae, that penetrate through the soil, weaving through miles of root-systems of forest, creating a network capable of carrying signals from one tree to the next, in an exchange of information about insects, drought, or other dangers. Over centuries, a single fungus can network an entire forest, which prompted the journal *Nature* to dub this phenomenon the 'Wood Wide Web'.⁽⁶⁾

Seeking the Light

Trees in suboptimal conditions adapt to make the most of the available light. With plenty of elbowroom, trees will branch out laterally, growing a wide canopy. But the same species when close to its neighbours will grow straight upwards, developing a longer, thinner trunk in an effort to reach plentiful light at higher elevations. Some species adapt by bending and twisting themselves over time as they reach towards the light.

With available sunlight, chlorophyll in the leaves allows a tree to photosynthesize - capture sunlight in the presence of carbon dioxide and water to produce needed sugars, while releasing oxygen back into the air. As sunlight and water become scarcer, deciduous trees save energy over the winter, by breaking down the chlorophyll, and loosening the grip of the leaf-stem to the branch. As the green chlorophyll fades other dazzling pigments become visible: the brilliant yellow of xanthophyll, the flaming orange of carotenoids, and the resplendent reds and purples of anthocyanins, that lay invisible under the green cloak of chlorophyll.⁽⁷⁾

To a philosopher, here are some wondrous lessons from trees. Firstly, underneath veils lie mysteries waiting to be uncovered. We need to dare to go beyond our comfort zones to discover something new and beautiful waiting to blossom...if only we let go of the familiar, to discover who we really are. Like trees, can we too turn away from darkness and orient ourselves toward the light? And finally, the wisdom that loss need not be looked at with



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"Of all the seasons, Autumn offers the most to man, and requires the least of him."

- Hal Borland ⁽⁸⁾

I Am Because We Are

Each tree in a forest grows in a unique location, and growing conditions like soil, water and nutrients can vary greatly over even small distances. This should make for variations in strength, and health measured by the rate of photosynthesis of each tree. However, students at the Institute for Environmental Research at Aachen discovered that in an undisturbed Beech forest, the trees shared nutrients through the fungal network intertwined within their roots, so that the rate of photosynthesis was the same for all trees. This means that "stronger" trees in rich growing conditions were giving sugar and water to those who were more deprived, ensuring their survival. But why would they do this? It seems to be in contradiction of the Darwinian principal of *survival of the fittest*.

In fact their much longer life spans seem to allow trees to experience time in a different way than the relatively short-sighted human view. The principle at work here seems to be that by losing weaker members of the community, everyone loses. Through gaps in the tree cover, the hot sun can dry out the moist floor, swirling winds can disrupt the formation of nutrient-rich humus, and turbulent storms can infiltrate, causing destruction. In hurricane force winds that can blow tree trunks dangerously past their flexion point, every tree plays an

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integral part to protect its neighbours. Minute differences in the unique characteristics of the trunks and branches, allow the trees to sway at slightly different speeds, gently hitting each other's crowns lessening overall sway and angle of bend. But this is only possible if the trees are positioned very closely together. So, disadvantaged or diseased members of the community, regardless of species, are protected and supported with essential nutrients from richer neighbours, contributing to the strength of the whole forest. ⁽⁵⁾

As extraordinary exemplars, trees show us how to have the courage to persevere against the harshest of circumstances. They teach us how to stay grounded even as we soar upwards towards the light.

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How much would humanity have to gain if we could truly perceive the wisdom of this: To be able to see beyond separation, to perceive that we are all part of one web of life, and that everyone ultimately loses when we compete, because in the ONE life of which we are all a part, a wound to one damages the whole.

This unity is hard for us to comprehend, but clonal forests serve as emblematic examples. Pando, also known as the Trembling Giant, is composed of 47,000 genetically identical trees spread across 106 acres in Utah. Aspens reproduce by sending up shoots from their roots, instead of seeds. They rise through the soil and grow into fully mature trees. What may look like a forest of individual trees, is really one giant organism, connected through a complex subterranean root-system. Though each individual tree lives to be 130 years old or so, Pando is estimated to be 80,000 years old! ⁽⁹⁾


Just as we must look below the surface to understand how these aspens are all

connected to each other, so too must we look beyond the visible, if we are to perceive how all human beings are connected. Many ancient traditions emphasize that we all come from the same source, that we are all part of a universal consciousness. But until science is able to catch up and perhaps develop the tools to explain what appear to us as indecipherable mysteries, we can take our cue from the wisest, ancient sages and philosophers, who all urge us to look deep into nature, for it is in understanding her laws, that we may comprehend life.

"Nature is the source of all true knowledge."

- Leonardo Da Vinci ⁽¹⁰⁾

As extraordinary exemplars, trees show us how to have the courage to persevere against the harshest of circumstances. They teach us how to stay grounded even as we soar upwards towards the light. They demonstrate that flexibility is not a function of how much the trunk can bend, but rather how to stay rooted, so that even as we bend, we can



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come effortlessly back to our centre. They show us simply and authentically, how to give abundantly, and how to align to the rhythm and cycles of life. These wisest of teachers speak to us not in voices, but in elegant metaphors of not only how to live, but how to die, and how to ceaselessly strive to be the best we can be. However, if there is one overarching precept that humanity can take from these magnificent beings, it is this: to respect and protect all life because we are all essentially an interconnected, interdependent and integral part of one unified web of life. △△△

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