TREE SERMON Feb 14, 2021 - Lynda Toews

Sermon title: Love – like the trees

Prelude to the service: Moonlight sonata being played on piano while this painting is displayed.

Before I begin, I'd like to thank all the people who gave their time, thought, creativity and effort into making this tree series come to life and blossom more than I could have imagined! I would especially like to thank my husband Gary Brown for all his support; and Dorothy Fontaine who sparked my interest in trees to a flame. Thank you to those who participated in the series with your stories and photos of trees. And thank you to Bethel for the honor of serving as your Artist-in-residence this term.

Bethel's vision statement is: "Loving God, each other, and our neighbours". Artists-in-residence at Bethel are (and I quote) "encouraged to creatively express this vision, recognizing that our creative impulses come from God." In the context of today's topic I would also like to include - loving ourselves, and loving creation under this umbrella. Since it is February 14th, Valentine's Day, we are going to end on a note about love and relationship, and find out what lessons we can learn from trees. To be clear, I am speaking of many kinds of love, not only Romantic love. Once you hear about the relatively recent scientific discoveries about trees, you will see that we can learn something from them about caring for the earth and for each other in a harmonious mutualism.

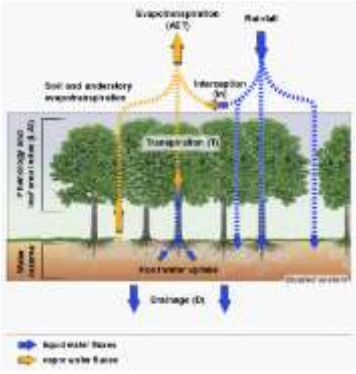
TREES CARE FOR THE EARTH ON A GRAND SCALE:

Trees have helped to create both our soils and atmosphere :
The soil by mechanical (root pressure) and chemical (humic acid) breakdown of rock, adding life processes such as humus and myriad decomposers;

The atmosphere by gaseous exchange, establishing and maintaining an oxygenated atmosphere and an active water-vapor cycle essential to life.

On a grand scale trees live in harmony with and care for the earth. For example, they can produce rain through transpiration. Let's have a quick look at that:

Trees transport water and nutrients from their roots to their leaves via thin layers of tubes. Hair-thin fibers transport water skyward, and water escapes as vapor from tiny pores on needles or leaves. This helps keep the forest cool, and water vapor can collect into clouds and eventually fall as rain. I only learned in school that rain came from evaporation from large bodies of water.



Even forests far away from the ocean have enough rain, because even though they may get some rain from ocean vapor carried by winds, some scientists theorize that because forests have a lot more surface area for water to evaporate off of, multiple canopy layers full of water transpire, or evaporate, entering the air.

As a result, we find much more water vapor in the forest. It rises and condenses into clouds, leading to more frequent rainfall. The forests represent great lakes of actively-managed and actively-recycled water. No other storage system is so beneficial, or results in so much growth!

Here is an image of the Amazon forest. Notice the cloud of water vapor hovering just above the trees from transpiration in the forest.

Here is a satellite image of forests of the Amazon and the Congo basins breathing water vapor into the atmosphere. You can see how it is flowing between the continents.

Job seemed to be fascinated with where rain comes from. In Job 38 he mentions rain several times: “Do you know the laws of the heavens? Can you set up God’s dominion over the earth? Does the rain have a father? Who fathers the drops of dew?”

In addition to the forest’s involvement in the earth’s water cycle, forests can lower temperatures, filter water, sequester carbon dioxide, pump out oxygen for creatures like us to breathe, and provide food and so many other things for other

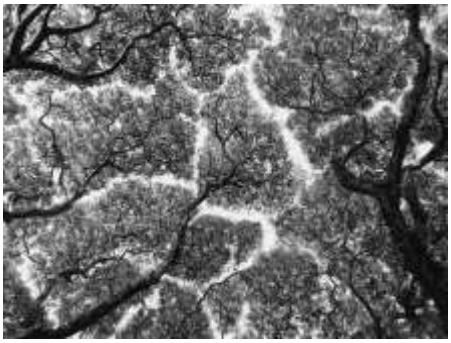
species. They essentially sustain life on earth. What a grand symbiotic divine design of love for life on earth! And God calls us to love and care for the earth too. There are many ways we can protect the environment at home, such as recycling, using cloth shopping bags, conserving energy, fuel and water, planting trees, and advocating for climate action.

TREES not only care for the earth, they care for themselves and for each other:

SELF-CARE

We have heard it said that we have to take care of ourselves before we can properly take care of others. Of course trees have many inherent individual survival tools at their disposal, and I'd like to just touch on a couple of them. Do you ever wonder why most conifers can stay green and not shed their needles in winter? Conifers' needles actually have an anti-freeze-like substance so they don't freeze. Deciduous trees can sense the coming of winter by the temperature change and the length of daylight. By sensing this, deciduous trees know when to drop their leaves in order to avoid the added weight of heavy snow.

But when our climate does unusual things like in October 2019, the trees were not ready for the weight of the snow.



LOVING EACH OTHER – one aspect of loving each other is giving each other space

If you have a look at your bulletin cover, you will see an image looking up from a forest floor. When looking up in a forest canopy, one can trace patterns of space running along the edges of each tree's crown – a beautiful respect of each other's space called crown shyness. Theories of why they do this include: to reduce the spread of harmful insects; to protect one another's branches from getting cracked and broken in the wind by keeping a safe distance from each other; and being careful to not steal each other's sunlight. Now this is a relationship lesson I can't resist commenting on, especially as it relates to our lockdown time during COVID. Many of us have been confined to our homes practically 24/7 and for some of us the need to give each other space sometimes became paramount. It is a crucial part of our human relationships and how we love and care for each other whether marriage partners or roommates.

This difficult balance of intimacy and independence is what poet and philosopher **Kahlil Gibran** explores with uncommon insight. I quote these excerpts from his poem of advice on the secret to a loving and lasting marriage:

Let there be spaces in your togetherness,
And let the winds of the heavens dance between you.
And stand together, yet not too near together:
For the pillars of the temple stand apart,
And the oak tree and the cypress grow not in each other's shadow.

LOVING EACH OTHER: Communication – and this is where my painting comes in.

While trees might seem like solitary, isolated individuals, the creator has imbued them with the unique ability to communicate with each other sometimes over considerable distance, both above and below ground. Communication is an important relational tool for humans too. We know this all too well when human communication breaks down and there are painful misunderstandings.

PAINTING I made the painting a stylized night-time scene revealed only by dim moonlight as if it is an unseen secret world with invisible qualities and some invisible action going on. I tried to reveal the energy between trees, branches and roots. I titled it *Moonlight Sonata* after the love song Beethoven dedicated to countess Guilietta. The first movement of this sonata gave me the sense and feel of this secret world of communication. You will hear it again at the end of the service.

Above ground, this communication among trees partly has to do with protecting themselves and each other. One of their defences against being overeaten is

producing chemicals that make them taste bad. At the same time, other chemicals warn nearby trees that a swarm of beetles, for example, is invading. As hungry insects salivate on elms and pines for example, the trees can chemically analyze the insects' saliva, reproduce it in mass quantities, and broadcast the chemical to the forest community. This cry for help alerts predators who like to eat the invading insects. Trees also have defensive compounds and anti-biotic properties called phytoncides . . . if you add a pinch of crushed spruce or pine needles to a drop of water that contains protozoa, in less than a second, the protozoa are dead.

Below ground, roots connect to each other through a system of mycorrhiza, or fungus. Fungal filaments called hyphae weave into the tips of the roots at the cellular level. Literally miles of these tiny tubes are found within a single cubic foot of soil between two tree roots.

Electrical impulses pass through nerve-like cells from root-tip to root-tip. Studies show that a tree in a forest can be connected to as many as 50 other trees. This subterranean communication network of tree and fungus mutualism has been called the **wood-wide-web**. Of course this alludes to the human technology network, the world-wide-web on which we can have many communication connections through e-mails, blogs, web sites, and various kinds of social media. But the wood-wide- web functions in very interesting ways. The fungi siphon off carbon that has been produced in the form of glucose by the trees during photosynthesis by means of chlorophyll that the fungi do not possess. In turn, the

trees obtain nutrients such as phosphorus and nitrogen that the fungi have acquired from the soil by means of enzymes that the trees do not possess. This creates a symbiotic relationship between the trees and the fungus, allowing both to thrive when otherwise they wouldn't. Sounds like a fair trade.

Through this system, trees also support the sick, feed the hungry It was discovered that trees weren't just exchanging nutrients with fungi, but also with each other, even distributing the nutrients where they were needed the most. This was tested by infusing trees with a traceable radioactive form of carbon, and finding the radioactive carbon in neighboring trees. For example, trees in the shade that were not getting enough energy from the sun were found to end up with more of the radioactive carbon than their sunbathing counterparts. Also, when one tree is sick, nearby trees share nutrients through this wood-wide-web. Every tree is valuable in the community, so even sick ones are supported and nourished until they recover. So, it's basically the tree-fungi equivalent of humans feeding the hungry and caring for the sick. It is amazing to think that this chemical information superhighway was right below our noses for eons, yet we had no clue! I think when the Psalmist praises God realizing he is fearfully and wonderfully made, that can also be applied to the trees and forest ecosystem.

Community: There are advantages to sharing. A tree is not a forest. On its own, a tree cannot establish a consistent local climate, but together, many trees create an ecosystem that moderates extremes of heat and cold, store a great deal of water, and generate a great deal of humidity, producing rain inland. And in this protected community, trees can live to be very old.

Some older trees even 'nurture' smaller trees that they recognize as their 'kin'. . . A dying tree might divest its resources into the network to benefit the

community, all of this shaping future generations, affecting gene regulation, defence chemistry and resilience in the forest community". In this sense, the forest is a cooperative community.

These discoveries have transformed our understanding of trees from competitive crusaders of the self to members of a connected, relating communicating system. The forest gives us perspective on the fact that our separateness is an illusion – we are all interconnected. The longest living organisms give us perspective on life. In the forest we find mutually beneficial relationships, lavish provision, and steady communication. These are qualities of the Creator. In Romans we read that ". . . since the creation of the world God's invisible qualities--his eternal power and divine nature--have been clearly seen, being understood from what has been created. . ."

Despite a learned wariness towards anthropomorphism, it is hard not to imagine these arboreal relationships in terms of tenderness, generosity, and even love. The communication and community found in trees can be an example to humans as we strive to communicate and live together in a loving community.

So we pray that with God's help, we will continue to learn how to love God, and to love ourselves, each other, our neighbors and the creation. Amen.

<u>Postlude to the service:</u> Moonlight sonata being played on piano while this painting is displayed