

Erwin Thoma

THE SECRET LANGUAGE OF TREES
Deciphering the Miracle of the Forest

Sample translation by Laura Wagner
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Introduction

We are all given them since childhood. They're simply there, accompanying and living with us. Trees — in the park, in the garden, by the side of the road, how parents like to park the stroller underneath a tree. Children's eyes looking up into the tree crown. Whether it's the blossoms of a cherry tree, a sea of maple leaves or the branch of a fir hanging low enough: the baby's hand reaches out from the stroller to grab it and then feels it, the tree, the friend, a companion for life. It's completely normal that we don't usually see all the good things and beings that are simply there, that serve us quietly and dependably consciously in our day-to-day life. This sometimes even happens with people we love. And it's no different for our trees.

Still they shelter us, the wood of their powerful trunks warms and surrounds us. Their roots grow deep into our heart. Anyone who has ever witnessed a powerful tree being cut down has also witnessed how this moves us to our deepest core. We are never indifferent to the felling of a giant that had been growing for centuries. The sway of a sky-high pillar of a tree tilting slowly at first in order to then hit the ground with full force leaves a lasting impression within us. We had seen it grow, after all. They move us — our tree brothers. Indeed, they have become even more important to us humans recently. The infinite forests of the earth, formed by trees, show us the concept of the perfect circular economy. At the same time, fears and words like shortage, refuse and anxiety about the future disappear from our lives. The example of the forests gives us courage. In the past, it was the ancient knowledge of the craftsmen that was passed on from generation to generation. Our grandfather taught me to use the secrets of timber cut in accordance with the lunar calendar in order to obtain lasting and high-quality wood for the construction of our wooden houses.

Today, science is beginning to research the qualities and the magic of trees more and more. Astonishing results come to light.

The secret of moon timber was confirmed by the renowned Swiss Federal Institute of Technology in Zurich (ETHZ) after controversial debates. Scientists centering around Prof. Maximilian Moser in Graz suddenly substantiate findings according to which

wooden rooms strengthen our heart, improve the heart rate variability, lower the pulse rate soothingly during sleep, strengthen the immune system and ultimately not only prolong our life, but keep us healthy up until old age. Brother tree, you give us so much. How can we thank you for that?

All these wonderful opportunities we are given by trees. They do not ask anything in return. The only thing we must do is refocus our time and attention towards nature and its possibilities.

To go to a tree, find a moment of quiet there, feel it, love it and learn its secrets — that is the simple, but oh so effective step that transports the wisdom and the power of nature into our lives: the principle of sustainable harvesting that creates space for newly planted life. The healing powers of trees that rebuild our health.

The wood itself, this wonderful material that enriches our existence in the form of a table or a house, a violin or a dance floor, a tool or a piece of art cheerfully and vigorously: it is much more than just brilliant material continuously optimized by evolution. Wood is the bearer of all the trees' energy and wisdom.

This book will accompany you there. The secrets of trees help us obtain a higher, more intense quality of living and maintain this world for our children at the same time. A world we should regard as an organism. As a body in which everything is interconnected. We are exploiting this mother earth. We mistreat it too severely. Since the first Club of Rome-report, scientists and thinkers have presented all the important philosophies and economic theories that could solve these problems. It is merely successfully carried out examples that we are lacking.

The concept of trees presented in this book is an example for the applied circular economy, for energy-self-sufficient industries that cease to cause waste, for life with sustainable resources, for renewable energies, increased health and happiness. The model of our forests is more than a simplifying panacea. It shows us by way of example how we can reflect on all areas of our live and structure them in a new way. For an improved life for ourselves and to the advantage of all beings on our earth.

I hope you enjoy this unusual journey into nature and the manifold personal inspirations.

Erwin Thoma

You're my companion

As a child, I came to know and love the forest as a place for adventures, but also as a source of nutrition and warmth. We humans were able to find warmth and delicacies in various forms there. Behind my parents' house in Bruck on Glocknerstraße a wild brook, the Hundsbach, was bickering. Alder trees and bird cherries paved its banks. This mountain stream taught us early on that in our alpine world the idyll could, now and again, turn into a brutal, unchained and destructive force of nature rather quickly. In times of dry weather the waters of the Hundsbachgraben rippled across the round, polished stones without haste. The clear water flowed smoothly towards the bigger river through spirally abraded ravines in the dark bedrock. But beware if the clouds, colored a deep black, should suddenly drift from the Hundstein in the oppressive midsummer heat. "The Hundstein weathers are the worst!," our elderly neighbor, Lackner Robert, used to preach time and time again. Indeed, within only a few minutes, such severe weathers had the brook swell to a seething, unchained steam shoving blocks of stones a meter high through the narrow brook bed amidst the brown mass of water, pushing them against one another so that we could hear the cracks emanating from the torrent's spray. Shuddering, we ran along the path next to the brook bed and observed the unrestrained force. The mountain itself, it seemed to us, wanted to hurtle through the narrow gouge with all the debris, the stones and the earth. As soon as adults saw us the edge of the seething brook, we were shooed away and sent home. It was much too dangerous there. Those who slip and fall into the surging flood are irretrievably lost.

Equally as unexpectedly as it had arrived, the flood disappeared again. Often enough, no cloud showed itself on the blue sky the next morning. The murmur rose up to my parents' house harmlessly from the Hundsbach. Those mornings were the days of implemented change. It wasn't just our small buildings, many a dam wall or even the waterwheel we had built that had disappeared. Even whole ponds were gone. In other places, boulders lay, damming the water anew. Between the two steep embankments they now formed future barriers that the ceaselessly flowing water would have to overcome.

The steep embankments that were able to contain the brook for all those years still seem strange enough to me today. There usually wasn't any hard rock to be found. Moreover, there was soft earth and the odd stone in between. Essentially a vulnerable formation, way too soft for the seething, boulder-spewing brook. The secret for the nevertheless wondrous support of the embankment became visible in many places. A labyrinth of tree roots occupied every gap in the earth diligently. They encircled stones like serpents, crevices were filled with an intimate grip. In the softer parts, in the deep brown earth, they grew a few meters deep, forming stakes. The branches spread in all directions in increasingly elaborate formations. There existed a system of roots in the earth of the embankment that was in no way inferior to the intricacy and artistic diversity of shapes seen in the trees on the river banks.

How do little boys know about roots?

It wasn't everywhere that it was possible to climb down to the brook. There were steep paths between the shrubbery and the trees that we gripped on our way down. Entangled strands of roots were coiled on the sloping ground. Their lines reminiscent of grandfather's hands. Those veins in the soil were there for our climbing hands and feet to hold on to. Usually grown together unalterably, sometimes divorced from the earth and elastic, the roots formed our ladders across the brook's banks. At the bottom, where the brook had carved its way to the rock bed, there was a spot where the water had managed to carve a gap into the embankment along the rock, underneath the coil of root wood.

This cave lead us into the secret world underneath the trees' rootstock. Usually it was only recognizable in the bulges growing from the bottom of the tree into the earth, but here we were able to observe the hidden mounting system of the underwashed tree from below. Incidentally, us boys were not drawn to this cave for the studying of the roots. Rather, this was one of the best hiding places in the whole village. As long as it didn't become too damp, too tight or too dark, we remained nowhere to be found, disappeared off the face of the earth. It took some time for our eyes to grow accustomed to the sparse light in the cave. Then the tangle of wooden coils became visible gradually. In the seeming chaos, the order of roots of different sizes, from the strong stilt roots to

the fine roots gathering nutrition, appeared unexpectedly. Everything we had experienced climbing in the tree crowns, the highly branched way from the big trunk to the increasingly small twigs was mirrored in the dark soil. The wild Hundsbach, carved into and narrowly confined by the densely vegetated embankment, was a paradise for us, the adventure-seeking gang of children.

One beautiful summer's day, my brothers and I, the Thoma boys, dove into the protection of the leafy forests. Songbirds disappeared in the green crowns above us, cowering in the heat of the alpine summer. Underneath we stood in the water in our short leather trousers and examined pond after pond. We knew under which stones trout was hiding. They ascended, coming from the Salzach, into our Hundsbach. As soon as we detected a red-spotted river trout in one of the ponds, one of us would block the stream at the top, the hands of the second formed a rake below with spread fingers. The third then chased the fish in the pond until it sought shelter in a crevice in the rock underneath the water. That's where a boy's hands could then grab the slippery body behind the gills skillfully. Of course this was a forbidden deed. "Illicit fishing" it was called, but there wasn't a generation of boys in the village before us that hadn't tried it. And the most reliable accomplices that covered and disguised us were the trees, the aforementioned alder trees and bird cherries. In between them the gnarled stems of elder berries would grow. We knew them all. Not one that we hadn't already climbed.

I learned early on to watch out for rotten branches. It wasn't just a single time that I fell a few meters deep, taking the broken branch with me. Grazed arms and legs are more easily memorized than any of my mother's well-meaning explanations. As the third-born, I had to try especially hard anyway, since it was always about keeping up with my two older brothers.

Our ability to climb almost any tree gained in such a manner was also employed by the adults.

Much more so than they are today, the landscape's trees were sources of nutrition and healing back then. "If you pass the elder tree, you must always raise your hat to it, that's how wholesome and valuable this tree is," my mother used to tell me.

In June we picked the white, umbel-shaped elderflowers. Some of them were dried and administered as an antifebrile tee in the wintertime. The bigger part was put into large canning jars with slices of lemon and water, in which delightfully refreshing elder punch was brewing in the sunlight. We didn't have store-bought lemonade back then. The range and taste of the things we ate and drank were determined by what was growing and ripening outside at that particular moment. We were never allowed to pick off all the elderflowers. That way, a part of them remained until summer. Dark blue berries were now ripening. These were picked by us in competition with the blackbirds and the starlings. "Elderberry syrup is much better and helps much quicker than all that stuff the doctor prescribes!," my mother was sure of this. And elderberry mush was a staple food in the late summer. But the harvest of the elder trees didn't stop there by a long shot.

The elder is a short-lived tree. After 20 years, the first branches already begin to dry out, and depending on the soil and the tree's location, elders reach the end of their lifespan after a few decades. In the final years, the intensity of bloom diminishes, the berries on the branches become smaller and their numbers decrease. Our mother, however, was not deterred by that. "Those old trees offer something quite special!" She taught us how to search the base of the tree trunk. That's where sheathed woodtufts, a certain small, brown mushroom, would grow once the tree had reached old age. "People only know porcini and chanterelles. But in a soup, these woodtufts growing by the elder tree are the finest and best mushrooms you could imagine."

That's why, in autumn, we searched the elder tree trunks and carried home baskets filled with woodtufts. Those were then dried in the attic. And so all throughout the winter we could enjoy vegetable and potato soups refined with wonderfully crispy woodtufts.

Indeed, it wasn't only our mother in her care for our nutrition who sought out the elder tree. Us boys were able to gain another, albeit forbidden, tool from this tree.

The branches of the elder tree are hollow or filled with a soft marrow that one can scrape out without much effort. And so it was easy for us to build a big pipe from the elder branches hollowed out in such a way. With that all sorts of dried leaves and

weeds were smoked. Of course none of us enjoyed the acrid smoke. But sitting in a hidden spot with a group of boys and pull a drag from an illicit pipe was something we certainly couldn't resist.

How fortunate that they would only creak, sometimes moan in the wind, and that the ceaseless whoosh of their crowns could only betray little of what they saw. We could always rely on them. They saw everything and spilled nothing, the tall trees at whose bases we set up camp.

A few years later, when muscles formed on our elongated limbs and more strength grew within the lanky boys' bodies, we were enlisted for forest work. Naturally this excluded the dangerous harvest of the very big trunks. At first, we were meant to take care of fire wood.

What an opportunity to see into the interior of the great forest beings we were presented with! Until then, every tree trunk had, after all, been one of those impenetrable pillars that tower defiantly. Of course we had long since explored how different these forms with their covered coats made from bark could be. The old apple tree in front of our house was probably the one we climbed the most. We climbed every branch, until it bent perilously underneath our weight. Those who keep on climbing feel the consequences severely on their own body. Lying on the grass, having fallen from the breaking branch and not being able to breathe due to the impact is the least that can happen. On such an occasion we also learned the meaning of the word "concussion".

We got to know the tree bark. The scales of the old trees that leave behind light spots when broken off. The deep furrows on the tall oak, they could also be used as climbing aids. All the mosses, hidden in a forked branch they begin their colonization until they have cushioned some branch growing in a shady spot. How nice to look at, soft and delicate those green furs presented themselves to us climbers. Those seeking a grip on the mossy trunk slip easily. There is no strong connection to the hard wood. The moss is rather interested in growing a thin layer of topsoil on the wood. This was the slippery layer we feared. And the lichen, rough and brittle when dry, become the most slippery coating when wet. All life happening on the living organism that is the tree was quite familiar to us. The only thing we couldn't do was look inside the tree. But now,

when preparing the fire wood, every piece had to be cut down to the short length of the oven. And so I was able to look upon the front surface of the trunk's annual rings every 25 or 30 centimeters. Looking at a tree's annual rings: what's there to see? Trees write their diary faithfully. Looking at the annual rings opens up these pages.

Ring after ring the trunk grows another layer of wood each year. In spring, as soon as the juices start flowing quickly after their hibernation, they carry all nutrients through the minuscule capillary tubes up to the furthest little branch at the top of the tree crown. Boisterous growth begins instantly. Cell by cell, well into the summertime, a new layer of wood comes into existence, one that covers the tree's figure by one, two or more millimeters each year, secretly and unbeknownst to us humans, underneath its bark. No wonder then that the bark keeps cracking open, rips, has to yield, gnarled and scaly, to the wooden body swelling on the inside. Not in quite the same boisterous manner as the cell growth begins in the spring, its end is already announced during the hot days of August. At the end of the month, the tree decreases the flow of its juices. The supply of nutrients for the cell production in the cambium, the lowest layer of the bark, runs out slowly and steadily.

What is the craftsman, just having finished building his handsome, big wardrobe to do with the last remnants of the material? He creates another small piece of furniture from them, a small cupboard maybe or a corner shelf.

The tree does the same in autumn. With less nutrients, it now builds smaller or smallest cells that are formed in comparison to the bigger early wood cells. This late wood, the last cells of each year, are thicker, darker and thus mark the distinct finish of each annual ring on the cut-off slice of the trunk.

Ring for ring away from the core, from the former shoot to the edge an image is formed, the personal biography of each tree.

If the rings suddenly become narrow, they report dry years and difficulties that the tree faced in growing. Are the rings much darker on one side, we can see that the tree has had to resist more pressure on that side, usually caused by wind from the prevailing wind direction. In order to support itself it created stronger cells with thicker walls here. The wind plays an important role in the trunks' statics; after all, it is one of

the biggest threats to the creatures in our forests, fixedly attached to the soil. A trunk whose core lies exactly at the center and whose rings circle it consistently smooth has never experienced much wind pressure. Here the observer recognizes a tree that has lived in a trough protected from the wind. The wind-blown tree on the mountain ridge, however, forms an oval trunk whose core is pressed to one side. It had to build effective supporting structures on the pressure side after all.

The next painter of the annual ring is the light. Trees grow rather slowly in the shade. Especially in fir trees, which grow up in the shade, often enough one can see trunks that form delicate rings hardly perceptible to the naked eye in a centered circle with about five to ten centimeters circumference. There are firs that have persevered in the shadow of their ancestors for 30, 50 or more years in that way and have hardly grown. Then the day comes when the old trees fall or are cut down. Full light hits the persevering tree now. All of a sudden, the annual rings are a few millimeters wide. The new live is thus unmistakably etched into the tree pit.

Annual rings reflect the growing conditions of each year, dry and wet periods as well as changes in climate, so precisely that scientists are able to tell by looking at the annual rings, their distance to one another, the century and the weather sequence in which the tree from which the wood originates grew. Therefore, there are typical formations of annual rings dating back several centuries. With modern microscopes and computer software every piece of wood can be allocated its correct era exactly. This science is called dendrochronology; it is the deciphering of our trees' diaries. This knowledge, however, doesn't only serve to research our trees. Often enough entire archeological findings can only be dated correctly by means of dendrochronological age determination of wood accompanying these findings.

Back then, as a young man chopping firewood, I was first and foremost astonished as to how differentiated not only the formation of the annual rings could be. The resistance that single tree trunks offered my work was something else entirely.

Because each bigger piece was chopped up. With the axe, with verve, with practice the blade was supposed to cut into the fabric where it aimed for the marrow, for the heart of the piece of wood. If it was hit in the right way, the split pieces would

scatter with one blow. But one was sorry if the blade dove into the wood along the annual rings, or worse, got stuck in an adnate branch! Pulling out the tool was impossible and so one would have to use brute force. Lots of blows with the piece of wood, stuck to the already heavy metal axe, were now in order, arduous and, worse still, sometimes accompanied by the older brothers' taunt. Thousands upon thousands of pieces were being split up. The pick on the fabric growing more and more assured. The feeling for the fabric of each tree trunk that had grown became more and more infallible. The spirally grown, the crooked, the simple and straight, the grained and the gnarled, all those characteristics grown from soil and humus were suddenly showing themselves without disguise. Gone was the bark, the outward protection. The interior revealed itself unmitigated. The color, the smell that wood has to offer enveloping the sweating human.

We experienced all the heaviness, the weight of the trees firsthand. The alder trees, the birch trees or a withered spruce — at the mountain forest's hillside we cut their trunks, applied the wedges and brought them to the ground. With this the actual work started. After the branches were cut off, the trunks were dragged to the nearest path with a simple tool, the pickaroon, and sent on a bumpy ride in wooden lines. After that, the trunks had to be cut for into pieces of about one meter first, then split and stacked on the side of the path to dry.

In winter we went back up into the mountain forest. Wearing a hemp harness we dragged the sleigh up the hill step by step. For an hour or two we became the draft animal in front of the firewood sleigh until we saw with relief the stacked-up firewood with its thick blanket of snow. It was loaded onto the sleigh, chained and with a "Heave-ho!" the carriage was set into motion.

The wooden sleigh creaked and groaned on the uneven surface of the snow-covered path. The logs behind us, the heavy load gained speed. The weight made the sleigh creak. The first bend appeared. Both hands on the paws. Those are wooden levers, screwed onto the blades with forged brake claws at the end. Pulling up the paws meant that the claws would dig themselves into the icy ground with a crunching noise. Our fingers clenched those levers tightly. Whatever you do, don't let go. I would have been lost had I let go of the paw. Going into the valley at full tilt on a sleigh one can't steer,

with a quarter or half a ton of thundering weight in one's back — it doesn't bear contemplating. How vulnerable, soft and helpless a human body is against the heavy, edged, tough meter-long logs.

The old men looked at us approvingly. We proudly steered the carriages along the Hundsbach down to the first houses. With verve, so that pulling the brake for the last time makes the claws dig into the ice especially deep and the white powder sprays onto the frozen path. Everything had to be stacked and covered once more, before the logs could be cut into pieces the length of the oven with the circular saw and stacked again in the wooden hut in the summer, when the weather would be dry. How many times I have held all the parts of a tree in my hands, felt them on my back, carried them on my shoulders until, in the following winter, I carried the wood to the oven in the pannier. Growing and falling, sliding and rumbling, splitting and ripping, drying and fragrant, sizzling and crackling, we saw and smelt, felt and heard the trees until they finally warmed up the living room in winter. In the end we carried a small drawer with ash onto the field. The last of the many smells that the tree emitted for all those years was released. Ash, white ashen powder, almost tasteless and in the end still the tidings of fire, of the oven, carrying the tree unified. We knew that this was the best and most natural fertilizer. Sometimes lye was made from the ash and the wooden floors were washed with it. The ashen lye foamed, the floors were fragrant. Everything was useful in its own way at any given time. Nothing was left over. There was no refuse.

In our relationship with the trees everything was resolved. They were a deeply ingrained part of our life.

Many years later I made my love for the forest my profession. I was a forester in a remote valley in the Karwendel, in Hinterriß. My territory included the magnificent Karwendel valleys, such as the Großer Ahornboden, the Johannestal with the Kleiner Ahornboden and the Birkkarspitze towering over it, the lonesome Tortal and the Laliderer Valley with the famous Laliderer Forests. The perpendicular chalk formations grew up to 900 meters high from the alpine pastures, straight, menacing even.

I could schedule my time in such a way that I was spending most days outside in my valleys and mountain forests.

In the summer there were bold farmers who prepared cheese in their cabins to the open fire. My woodcutters, that's what forestry workers were called back then, were alpine farmers from the Oberinntal who, during the snow-free period, earned some extra money to what they made from their small-scale agriculture

They already had chainsaws, but there were no helmets or any other kind of protective clothing yet. Similarly, the pressure to perform arrived only gradually. After each felled tree the woodcutters would pause, pick up the axe and cut three crosses into the surface of the remaining stump. In this environment, gratefulness for the fact that everything always went well was part of the men, as was a reticence rarely seen today.

In the evenings we would go to the hut, where there was a long brick hearth at which each stirred their own fire. Over each fireplace there was a steel sheet with iron rings in its center. As soon as the fire crackled, the rings were lifted off with a hook and the sooty pot was put above the fire. Each prepared their own meal, as was the Pfunderser farmers' custom. Soot, smoke, sweat and the smell of resin, this was the air in the woodcutters' hut. Usually all tasks were performed without any commentary. Still, it was one of our children's favorite place. At night, I liked to drop by the hut at the Johannesbachtal. We spoke briefly about the day, what's there to do tomorrow, is anything missing. If at all possible, the children sat next to us and observed the goings-on.

They wanted to delay leaving for as long as possible. Here, in the woodcutters' hut, they smelt a world different from that of the sheltered nursery in the forester's lodge.

I unconsciously got to know a phenomenon back then that wouldn't only be defining for my life, but also become exceedingly important for many other people. In high summer there were also pitilessly hot days in our mountain valley. In that heat the woodcutters' huts were heated up unbearably during the day. These lodgings were not built badly by our standards. Buildings with wooden frames, wooden cladding on the inside and on the outside, stuffed with insulating material in between — a lightweight or balloon framing construction.

My forester's lodge, on the other hand, was built from thick, strong trunks. For present standards, it had a poor insulation value, but it was made from solid timber after all.

The lodge, made from solid wood, remained comfortably cool even during the hottest days, while sweltering heat spread in the woodcutters' huts. The heat on the exterior wall of the lodge was not "pressed" inside, as was the case with the more lightweight constructions in which the woodcutters lived. Each summer's night that I returned from the lodge to the huts I could feel the difference firsthand.

Nobody thought much about this difference. "We just have to tear open each hole and leave it open the whole night through, otherwise we couldn't sleep in this furnace!" the woodcutters said about this. And so, unknowingly, I received my first lessons in construction physics and this would be extremely important to me later on.

But there were other notable encounters and experiences that I couldn't, for now, explain with my learned engineer's knowledge.

There were the violin makers from Mittenwald. Two young men knocked on my door one day. In the Karwendel, in the high-altitude valleys, some of the legendary trunks used to make violins were said to grow here and there. Often a only a single tree among many of its kind was suitable. These rare specimen were called striped spruces, because their fibers didn't run straight as it does in common spruces, but in a wavy pattern. The soil and the climate in which these trees grow have to offer rather specific conditions. Such a dream of a trunk has to grow, among other things, in a spot completely sheltered from the wind. Each irregularity, each compression of the wood on the inside destroy the coveted sound properties.

In short, we wandered through the mountain forests for days, knocked and listened to the trunk's interior. In the beginning I was astonished when they claimed that they could hear a lot of the future sound characteristics by merely knocking with the back of the axe. In fact, most of the barky, thick spruce trunks sounded similarly muffled, whereas there was a noticeably clearer, lengthier and denser sounding gong that answered in a few of them. Each time this sound caused hope and gleeful anticipation. Now the fiber had to be examined. Were there striped spruces here, of which a shaving

would detach from the trunk's surface not in a straight fashion but intricately rippled? I knew which of these grown trees would be selected for harvesting in the coming years. And so we could take a piece of bark from those and examine the growth of the fiber by shaving off a layer. Was it luck? Coincidence? We were actually able to find an ancient spruce with a delicate sound and rippled growth. The two were overjoyed. They were faced with their first violin tree high up in the lonely Karwendel Valley. But I, the young forester, was also moved deeply by the resonating spruce.

Up until that point I had, according to regulations, delivered the wood from my forest to a big saw mill. Admittedly, the trunks were fed to the modern machines at impressive high speeds there. But there was no time in this large-scale industry for figuring out the best way to exploit the whole potential, the harvest, for observation and choosing of the best possibility that every tree offers us humans.

Suddenly there were two young men, knocking on my trees like woodpeckers and in doing so finding a treasure that would otherwise have disappeared into the shredder of mass processing unnoticed.

The two of them told me about the myth that even Stradivari allegedly found the wood for his violins in the Karwendel. Today a Stradivari violin belongs among the greatest cultural treasures in the world. The thought of letting many a high-quality trunk perish in the machinery of mass processing didn't sit right with me.

I later immersed myself into this topic and found a few gorgeous violin trees. As a result, an elderly violinmaker, whom I had invited to view one of the trunks, found the best trunk of his life, on his 70th birthday of all things. He was overwhelmed with happiness and stood crying with joy in the mountain forest in front of the tree he had dreamed of all his life.

He visited me two years later. "From the trunk I was able to fashion raw material for a whole string of violins. Normally those would be stored for years and years before they are processed. But I wanted to build a single violin from them already. Here it is!"

He took out a beautiful violin and as a way of showing his gratitude, he played for us in our wooden winter garden. Outside the wind was playing the leaves on the trees. Inside the violin was ringing out. The sound, the vibrations of this spruce — for

more than 500 years it had grown in the High Tauern near Salzburg, this my wife and I could feel through and through.

Trees can speak to us humans in so many different ways. The violin gives them an especially intimate and beautiful voice. Before we listen to more voices and languages of trees, we should, however, take a look at ancient knowledge about the rhythms of nature, moon timber, scientific research as well as craftsmanship from Europe to Japan.

Moon timber

This wasn't part of my normal set of duties as a forester: an architect from Bavaria, who was furnishing his own home, wanted to utilize wood in many different ways. He didn't have a lot of knowledge on the matter, but he had heard that construction wood is better if it's harvested during a certain moon phase in winter. This knowledge was not taught any longer while I was training to be a forester. It had of course been present in my childhood. The wooden fireplace in the farm house charred and full of black soot, but not catching fire because it hadn't been harvested during the right lunar phase. The fence pegs that were only erected on the field during the waning moon. They were pulled into the earth. "If you build a fence during the waxing moon, it will already wobble after the first winter," they said.

Tapping a spring and connecting it to the trough or the drinking water well should, at all costs, be done during the waxing moon. It's common knowledge that springs can run dry without any apparent reason. And in any case, the ancient wooden farmhouses whose wood had become black on the outside and hard as stone on the inside over the centuries were all built from wood cut down "under the sign", meaning wood that was harvested at the right time, that is in winter during a waning moon and sometimes even on a certain day of a specific zodiac sign in addition. These and many more traditions and stories I had heard from the elderly in the village as a child in the mountain village. Of course the people also knew to give accounts of the moon's influence on humans and animals. Cutting hair during a waxing moon, under Virgo and Leo, would lead to prime results. Births are easier during any changing moon. Healing herbs are stronger when they're plucked under the waxing moon. Indeed, all growing of plants in the garden, including that of trees, depends entirely on the moon.

Upon leaving childhood and entering the forestry training, this wisdom ceased to play a role. Now it was all about the technically possible and economically optimal. Nature's rhythms seemed to be a thing of romantic memories. That's when this architect came along and wanted moon timber from me. With that, he awoke many a childhood memory within me. We agreed on a price that wouldn't hurt the publicly owned forest.

After all, if moon timber leads to the utilization of more potential than ordinary logs do, why not?

In any case, the construction wood for the architect would become my first excursion into moon timber. For hours we climbed up the Johannestal covered in deep snow on skis in order to harvest beautifully grown wood up there, not far from the Kleiner Ahornboden. We carried the heavy tools on our backs. One man shoveled the snow off the tree bases. Then sawing, wedging, until the giant trees would bend and their snow covered tops sunk into the hillside covered in white. We had a lot of work to do felling more than 30 trees in the short hours until the early dusk. There was hardly any time to rest. Take a quick sip of water, a snack and then back to the saw, placing the wedge, the axe on the wedge knocking brightly through the lonely valley high in the mountains. The last tree fell at dusk. Thankfully the descend on skis went quickly. With the falling darkness on December 30th we reached the forester's lodge. Tomorrow would be New Year's Eve, today we had harvested a batch of moon timber. Tired but happy we celebrated the arrival of the new year in the lodge.

Spring was, strictly speaking, too early for the wood to be processed and used for construction, as it was still not completely dry. During the topping-out ceremony I was admiring my trees, the delicate high mountain fiber. It was immediately apparent that one of the beams in the wooden ceiling was cut from a different tree, probably a spruce in the lower regions. The wider annual rings identified wood that had grown more quickly. The carpenter who had processed the wood answered: "Yeah, yeah, we cut one of the logs wrong, and since we didn't want to delay construction, I used a beam from my own stock!"

It wasn't a tragedy, really. The beam was only recognizable to be of a different growth by experts. Years later I went back to the house. Unbelievably, my Karwendel moon timber lay unchanged and beautiful, even though it hadn't had time to dry completely. Only the replacement beam was cracked and had changed immensely during the period when the heating was on. Those pronounced longitudinal cracks weren't serious. Longitudinal cracks hardly compromise the static and function of a solid beam. Still, I couldn't have imagined the difference between moon and non-moon timber

as pronounced as it was here. My grandfather's stories about wood harvested "during the sign", meaning moon timber, gained a new, practically usable meaning for me, even though I didn't even know the most important advantages of moon timber then.

The following chapter was written at the Gerlos Pass, the passage between the Tyrolean Zillertal and the Salzburg Salzachtal. In these alpine forests I bought a batch of spruces and larches for my own saw mill when I was a young businessman. The harvest date in January, during the waning moon was written into the contract and was followed exactly by the workers of my former employer, the Austrian Federal Forests. I had obtained a truck to transport the wood that delivered the tree trunks to a meadow next to the Gerlos Pass road and stored them there.

After the two weeks of the waning moon had passed, my wood was done being harvested and was stored in a large pile on the Alpine meadow next to the road.

The company, however, wanted to carry on working and was now felling the next batch during the waxing moon which was then sold to a neighboring buyer. He stored his wood not far from mine in a separate pile. The strong snowfall covered everything underneath thick blankets. In spring this situation became an unintended experiment. The cool mountain valleys with high precipitation in the Northern Alps offer ideal living conditions for spruces, larches and firs. Bark beetles are important inhabitants of the coniferous forests. The spruce bark beetle, the striped bark beetle and the six-dentated bark beetle are the most common specimen that live in a well-balanced manner with their trees in a healthy forest. In order to preserve this balance between beetle and trees, there mustn't be any trunk wood covered with bark lying around in the forest in spring, which is something every forester knows. Harvested tree trunks like these are cut off from the natural defense system by their roots and are thus ideal reproduction and breeding grounds for the bark beetle. In places where the bark still holds enough remaining dampness, the beetle has any easy job of it. The flow of resin in healthy trunks can't prevent it from breeding beyond a balanced number. Opportunities like these are magical attractions to the forest beetles. As soon as the first warm, sunny days arrive in spring, the small animals cluster around these ideal sites to mate and deposit their eggs.

The beetle infestation shows itself unmistakably a few days later. Thousands of minuscule incisors begin to gnaw their holes into the bark. The connecting tunnels are built right beneath the bark. The resulting saw dust is swept outside neatly. That's where the notorious piles of saw dust emerge, often times visible from far away, hundreds and sometimes thousands of beetles on a single tree trunk. At that time the wood collection from the forest is usually a bustling business. Every farmer who owns tracts of land there along with every forester rushes to fetch the barky wood stored in their own forest first.

Once the tree trunks have arrived at the saw mill, there's a rosser waiting for them. Beetles already settled within the bark are mostly squashed during the de-barking. In any case, however, the breeding grounds are eliminated once the wood is freed from the bark. The beetle won't enter the naked wooden surface of the now peeled and pale trunks. They need the warm and damp climate between bark and trunk in order to build their initial nests. After all, it's not a coincidence that they are called bark beetles.

There was a forester urging me to fetch my pile from the Pass as well. And so I went there on those first warm spring days in order to see whether there were any beetles on their way yet. I was relieved, because as much as I climbed across the pile of wood, there was not a single beetle, no pile of saw dust to be seen. With my small pick, always handy, I removed there and where the bigger chunks of bark in order to make completely sure. Because sometimes the rain washes away the outer signs of the beetle infestation off the bark, the beetles' secret activities go unseen. Underneath the bark the burrows would become apparent on infested trunks. There was nothing to be detected except the pleasant, comforting smell of resin.

On this occasion a habit common with all sawyers and other "wood nuts" came over me. I crossed the roughly 50 meters on the meadow to my neighbor's stock pile.

If there are tree trunks lying around anywhere I find myself unable walk past carelessly. The annual rings on the fronts tell me about soil and growth, potential patches of rot due to old injuries to the bark, falling rocks, careless woodcutters or an overly hungry deer; the lateral surface with the cut-off branches tells so much about all the possibilities that could present itself to the craftsman later on.

Curious then, I arrived at my neighbor's pile. The surprise was great. In front of me, all traces of the most intense bark beetle infestation presented themselves. It was mostly the brown piles created by the spruce bark beetle that covered each and every trunk. In between, however, there were also numerous piles left behind by the striped bark beetle. That one doesn't just eat through the bark, but proceeds right into the wood. Therefore, its piles are white, seeing as he emits finely chopped wood instead of brown bark. Everything that foresters and saw mill owners would love to abolish was bustling right here in the daze of procreation. Not to think what would happen if this process were to carry on undetected! In a few short weeks the newly coupled beetles' brood would have developed in their thousands. A new army of greedy insects compelled to look for new breeding grounds. If there were only healthy trees to be found when that happened, they would be infesting those.

I just couldn't believe it. Those trunks had been harvested at the same place in the same month of winter. Just during the reverse, the waxing moon. I moved between the two piles incredulously. It remained as it was: my moon timber was unaffected, the non-moon timber was densely infested by the beetles as the tastier of two choices. That's when I arrived at the most important advantage of the wood harvest at the right time. Then the natural resistance, the natural protection of this wood is at its best. I hadn't learned anything about this in any of my lessons during my training program. But what I was seeing here in front of my own eyes was unmistakable.

Coincidence brought me my second lesson and prove for the natural durability of moon timber a little later. In the fall, a farmer delivered a batch of Swiss pine to my small saw mill. Every expert knows that pines, when cut into a log, present with a blue discoloration at the outer layers, the so-called sapwood, within the course of a few days, and most certainly over the course of a few weeks, in the warm summer air. This is due to a fungus that "only" changes the color of the wood while leaving its solidity intact. For upscale purposes, such as furniture wood for the carpenter, however, this wood is devalued. Nobody wants blue-tinged and striped furniture, windows, doors or wall cladding. Swiss pines, and all kinds of pines in general, are therefore harvested during

the cold season and cut into planks and pillars. Those then dry, stacked and dryly stored, so quickly that the danger of discoloration is largely averted.

Against all these rules the farmer brought this batch to the stockyard of my saw mill on one hot late summer's day. "Fatal for the valuable Swiss pine wood," I thought. But when the saw gate cut into the first trunk, I was greatly surprised. Not only did the wonderful pine smell spread across the whole yard. The planks fell apart behind the saw a pristine white as if from freshly harvested trunks. "Well, well," said the farmer, "it's worth having a look at the moon before the harvest. We cut those pines down last year on December 21st, on St. Thomas's Day, during the waning moon. What with all the haying, they've been left in the forest until now!" I couldn't believe my ears. Swiss pines that have lain in the forest all through spring and summer become blue as plums and almost completely worthless. It's predominantly the Swiss pine that's being used for construction in the visible interior of the house. But it was apparent by the surface of these trunks that they had lain in the forest burnt by the sun for a long time. The proper time to cut down trees had obviously protected the expensive Swiss pine trunks from the fungal infestation.

These experiences, incredible to me at first, my wife's grandfather, the ninety-year-old carpenter, expressed in a few simple words: "If you want the best wood, you have to cut it 'under the sign'. The you'll never need to use a paintbrush again!"

With "under the sign" he was referring to the moon timber, cut in winter during the waning moon. With "never needing to use a paintbrush again" he meant that each coating of the poisonous timber preservative that harms humans as well as nature would become superfluous. How many times do we receive good advice and are still only able to act upon them in our own lives when we can experience them first-hand.

My trees on the Gerlos Pass that the beetles hadn't wanted to eat and the Swiss pine that the fungus couldn't penetrate have helped me a great deal in understanding my grandfather's advice and put it to good use in my own life and my business.

The years as a forester in the Karwendel ended when our oldest boy had to go to school. We didn't want to send the little one to a boarding school, and so we left the Rißtal we had held dear and moved to the old home, the Salzburg Salzachtal. That's

where I started to build my own company as an independent entrepreneur. The most vital starting capital were the experiences I had gained along with my wife's grandfather, who at that time was close to 90. The old carpenter taught me to build my first wooden houses. The moon timber was the only way we used to procure wood since the beginning. At first, we were often ridiculed. But we also experienced a lot of approval, especially from adepts and old craftsmen who were glad to know that this knowledge wouldn't be lost.

Along with the number of buildings and the amount of wood used our security grew as well. After a few years the small saw at the Großvenediger had become too narrow and I had the opportunity to take on a bigger saw mill in Styria. That's where we also established a wonderful cooperation with the federation of forest owners in Styria. A certified moon timber system was developed and winter for winter we drive some ten thousand solid cubic meters of coniferous timber to the mill. The 13.000 square meters of company grounds are fully stacked with wood in the spring. It's marvelous to take walks among the rows of stacked tree trunks during that time. Surrounded by cut surfaces, annual rings, the smells of trees and tree stories, probably the biggest storage of moon timber becomes apparent. Just by these sheer masses we're forced to do every year what that farmer in Oberpinzgau did with his Swiss pine trunks. We cannot harvest moon timber during the summer, and so we store enough wood in the winter so that the mill can be worked regularly throughout the whole year. Until the first fresh wood arrives in November, again harvested in the waning moon in order to let its juices rest. Year after year we observe the high durability of the moon timber. According to the doctrine, the trunks simply stacked outside during the warm summer should be more or less infested and damaged by fungi and insects come fall. Yet the interior of the trunks stored during the hot summer is still unblemished, white and not infested when fall comes. Some planks get a grey patina on the outside of the pile when air-dried in storage. But even this can be removed with one stroke of the plane. On the inside, it will have remained white.

Why should we poison trees in order to keep the wood durable if there is a natural way to do it? The oldest wooden constructions in the world can be found in

Japan. There are temples over 1600 years old that have never been poisoned. The saying goes that the monks knew how to work with nature even back then.

When I wrote my first book on this subject in 1995 (*Dich sah ich wachsen – Über das uralte und das neue Leben mit Holz, Wald und Mond* [*I Saw You Grow – On the Ancient and the New Life with Wood, Forest and Moon*]), I received reactions from all over the world. In thick binders I collected the letters written mostly by elderly people. Craftsmen, farmers and "forest people", who added their own experiences to my observations and who confirmed what I had written down. But there were also critics. The positive influence of the right time to harvest was discounted as not provable first and foremost by the industry. To this, I could only reply with my own observations and experiences at first.

For the time being, science could not reach an agreement when it came to this subject either.

Sometimes life works in strange ways. After years of working in the Austrian lumber industry, I got to know a man and hold him in high esteem, who not only ran one of the biggest saw mills of the country but was also a spokesperson for the industry. One day, after acquaintance had turned into trust and friendship, he told me something: "Erwin, when you published your first book on the moon timber, I didn't know you. We sat together back then and said, what kind of a nutcase is that. When people start asking for moon timber, we're in trouble. We can't organize something like that in our big saw mills. And so we looked for a professor who'd conduct a study so that people can see that moon timber is unnecessary. I think differently about this today. It would help everyone if people had more trust in wood!"

There had indeed been a remarkable film after my first book was published. The director of the section on popular culture of the ORF Salzburg at the time had read my book and discovered one of the wooden fireplaces I had described in the Salzburger Lungau. The owner agreed to sacrifice a shaving, cut from the historic fireplace, for an experiment live on air. An equally long, wide and thick shaving was cut from a dried log of wood and placed right beside the other. Now both shavings were held over the same flame of an oil lamp. In a television report in the Austrian prime time program the

viewers were able to observe how the fresh shaving burnt off merrily, even though it was pulled from the flame once it had caught fire. The shaving from the ancient fireplace made from moon timber on the other hand was smoldering as long as it was held in the flame. As soon as it was taken away from it, the fire went out. The retired Hofrat Arno Watteck, a famous researcher of folklore, was conducting this experiment on television. My book and the report caused the reactions of the industry described above.

They actually found a professor at a timber engineering school who injected samples of moon and non-moon timber with fungal spores in test tubes. After very short intervals of a few weeks the desired explanation arrived: "We have conducted research and there are no differences between moon and non-moon timber!"

There are publications on this experiment. An ORF magazine on popular science even published a report with the following tenor: moon timber, superstition, myth and no scientifically provable effects. The next morning the telephones in our office didn't stop ringing. We realized immediately that a test with fungal spores in a test tube over the course of a few weeks or even months was way too short. There are no reliable assertions to be made about the centuries-long durability and resistance.

If one wishes to examine the resistance to decomposition in a legitimate scientific manner, one would require a series of tests over the course of a few years at least, with actual weather and outside where all natural forces work together. The great physicist Werner Heisenberg once said something to the effect of: "The impact of the individual is always different from the impact of the individual within the whole!" The durability of moon timber can only be researched reputable within the whole, in this case that is the natural weathering over the course of many years. The test tube blocks too many real effects.

This should become apparent to everyone. Of course it wasn't possible for us to convey this correction to the mass of viewers. And also the question of who would organize something like this remained unanswered at that time. But life keeps on working.

It was only a few months later that the scientific results of research conducted for years were published elsewhere. Strangely enough, we had had no clue up until that point that this subject had been dealt with in Switzerland for a few years.

Professor Ernst Zürcher, who was researching and teaching at the Swiss Federal Institute of Technology in Zurich (ETHZ) back then, published his scientific research on the topic of moon timber in different international scientific media. The studies on moon timber by Zürcher were preceded by extensive studies in which the professor was able to show that the germination of various types of plant and tree seeds are significantly dependent on the lunar phase during the sowing. Thus he was the first to scientifically prove ancient rules of sowing. So the professor knew from this example how organic processes are aligned with different rhythms and are affected by them. At first the researchers discovered the measurable influence of the moon on the trees in a strange behavior, unimaginable until then, of large forest plants. The trunks of the trees in the forest swell up or down slightly, minutely following the process of the rhythm of the waning and waxing moon. Trees pulsate more or less in the rhythm of the moon. Of course these movements of the tree trunks happen only within the fraction of a millimeter, but they are clearly measurable and coincide precisely with the moon phase. Ebb and flow within the trees make their trunks, the structure of their wood, swell periodically in order to retract again. It's rather interesting that tree trunks carry on making this movement according to the lunar rhythm for a few weeks even after they have been cut down until they fade out for good. These experiments were repeated successfully in darkrooms, in order to eliminate sunlight as a cause. The moon is the driving for this mysterious pulsation of the tree trunks.

In further tests the Swiss researchers centering around Professor Zürcher explored the lunar influence on the quality of the wood step by step. They were able to show that moon timber behaves differently during the drying process than "regularly" cut wood. Wood harvested in winter during the waning moon contracts measurably stronger. The structure of the material thus becomes thicker. Back then, Zürcher showed significant differences in the density during a long series of measurements. With that he was the first to prove in scientific tests that the elders' rules for treating wood were based on real experiences. Probably the most important publication for our practical work followed a little later. In long-term tests conducted over a few years on the rooftop of the university specimen of moon and non-moon timber were subjected to weather conditions. After

numerous years the actual cell breakdown caused by the normal fungal infestation in the unprotected environment was compared. The results matched our observations par for par. Moon timber has a visibly higher natural resistance to fungal infestation and the processes degrading wood. The farmer from Oberpinzgau with his Swiss pine wood knew about this and used precisely this natural defense against fungi that the moon timber possesses. His ancestors, who had taught him that, had always done so as well.

In times of Julius Caesar ships were only allowed to be built with moon timber. The historian Pliny reports that master shipwrights who discarded this rule received the death penalty. The Romans knew that this wood was more resistant to the shipworm, the woodworm of the seas.

Practically all advanced civilizations in the history of humanity in which wood was processed include reports of moon timber and favorable times for harvest. Professor Zürcher was the first scientist to lift the veil off these wooden secrets for modern science.