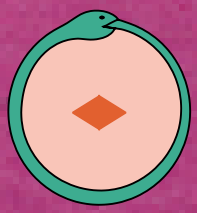
A LIFE DRAWING TREES

Emanuele Coccia and Francis Hallé



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SELVAGEM

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Interview with Francis Hallé by Emanuele Coccia

Lover of trees and plants, rainforest specialist and staunch virgin forests defender, Francis Hallé is a privileged witness of the incredible richness of nature, as well as its fragility in front of human beings. For more than sixty years this traveling botanist has spent his life close to the trees. If, on one hand, he studies them scientifically, on the other hand he also looks at these living beings with wonder. Between contemplation and methodological accuracy, he draws its flowers, leaves and also its architecture in the precious notebooks that accompany him from day one. It's his very particular way of truly and intimately reaching out to these beings.

Emanuele Coccia: Francis, you've traveled the world and its rainforests, observed and drew thousands of trees, cataloging them in precious notebooks. I wouldn't dare to imagine the amount of species and trees that you might keep in your memory. But even so, I'm curious: what's your first remembrance of the trees?

Francis Hallé: I was four years old and France was occupied by Germany. My family couldn't dwell in Paris. We moved forty kilometers away from the capital, to live in a hectare of forest and garden. We were nine: my parents, me and my siblings. Thanks to this land, not only did we live very well during the war, but we were also able to help our neighbors. I thought we could satisfy all our needs with a patch of woods and a vegetable garden. I especially remember a chestnut tree, not too big, that I used to climb. Anyone who climbs such a tree can easily climb a large Corsican Larch pine tree at least forty meters high.

Trees seemed to me easy and cozy roads. It was an entire landscape and a way of seeing the world from above. All the work I've done later about the dossel[1] is tied to childhood memories.

Emanuele Coccia: That was the moment you decided to dedicate your life to trees?

Francis Hallé: This happened much later. When I joined Sorbonne in Paris, I wasn't so interested in plants, but in animals, like 99% of the students, by the way. Today I like animals, but I can't take them seriously because they move all the time. More than this: I´m an animal myself and if somebody shows me one, I can identify several things about this animal, even without knowing it. I'm not a zoologist, but I know how it moves, I can recognize its front and its rear, the paws, the back and I know that it has two identical shapes, making it possible to turn left and right. I know that it will be happy if I give it some food, and I know that it'll be afraid and run away if I clap my hands.

When I was a student, I used to live near Raspail Boulevard. A small plant grew on my balcony, even though I hadn't taken care of it. I didn't know what it could be, I didn't even know that something like it could have a name. Thanks to the Parisian rain, this plant survived. Over a year, I watched it grow and produce beautiful flowers with such a pure and rigorous aesthetic. I also watched it generate seeds and reproduce. In the next year, this plant was all over the garden pots. It was magical!

At that time, I supposed all trees should have leaves. Throughout my studies, I learned some of them didn´t. In tropical regions, several trees don't have leaves, but they are still alive. It was at that moment that the plants seemed to me much more interesting than animals. I didn't know anything about them, everything was yet to be discovered.

Emanuele Coccia: It's a kind of enchantment, an aesthetic encounter, which the animal isn't able to provoke.

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1. Botanical term which refers to the coverage formed by the encounter of treetops.

Francis Hallé: Exactly. For me trees are much more beautiful than animals. Animals poop, yell, and when they die they smell terribly bad. Whereas a tree, when it dies, doesn't stink – there´s less sulfur in its molecules. I wonder if the first relation with trees isn´t initially aesthetic, even before being scientific. When we meet a beautiful tree, it's just extraordinary.

Emanuele Coccia: Is it because you found them extraordinary that you felt like drawing them?

Francis Hallé: My maternal grandfather used to draw trees, but only for aesthetic pleasure. He was Parisian, like me, but used to work in Brittany. He spent his life drawing, painting and making engravings about Brittany. I spent mine drawing trees with a slightly different intention, but there's a clear connection between us. I loved my grandpa. For me, drawing is a usual way of representing things.

Emanuele Coccia: Deep down, the botanist has always needed an aesthetic intercession.

Francis Hallé: The botanists have always drawn - at Padua University, I saw superb collections of ancient drawings of plants! It seems to me that entomologists also drew, even if today they use photography. The photographic feature can´t be applied to botany, because you can't detach the plant from its environment. There's a much greater reason: trees are extremely complex and huge structures. To photograph in 1/50 seconds isn't enough to experience the tree. I work in the heart of the forest and sometimes I take the whole morning to draw a tree. I walk around her, I watch it from the front, from the side, from below and above. All angles are good. Questions emerge in my mind, and the answers appear before my eyes. It takes time to get acquainted with a tree, and photography is excessively fast.

Whenever I draw a tree, whenever I outline the plants' external forms, I have the feeling I'm in my habitat, that I'm fulfilling my mission on Earth. I forget about time.

Emanuele Coccia: Do you lose track of time because you draw trees in every detail? Do you make a sketch before moving on to drawing?

Francis Hallé: I take field notes and make several pencil drafts in the notebooks. In my earlier career, I used small notebooks that I found at the countries I visited, in common stationary shops, on street corners, but they were all very fragile. Now, after years of experience, I prefer larger, reinforced notebooks, made of white paper and with magnetic clasp.

When I come back to the camp or when I'm in laboratories with a table, I make a summary of my drafts and notes. I retake some of my drawings with felt-tip or ballpoint pen. I don't color the drawings in the field, it's almost impossible. I add colors when I'm home. Doing watercolor when you're in a tropical forest, in the rain, isn't comfortable. I can do it, but I need particularly good conditions.

Originally, all these drawings were spread, but throughout the years I managed to classify them into files by family of plants. It's very interesting to gather all Asteraceae, Apocynaceae, Violaceae, etc, that I've been drawing all over the world.

Emanuele Coccia: Your notebooks, which are absolutely sublime, resemble those used as working too for anthropologists in the 19th and 20th centuries. But yours are evidence of the plant kingdom. You consider plants on the same level as humans. That´s beautiful.

Francis Hallé: I have a regret: people consider me solely a botanist. I wouldn't qualify myself as an ethnographer, and I don't consider myself an artist either. But when I travel, the countries I visit interest me as much as its plants. Tropical countries fascinate me. It's the least known but the most interesting part of our planet. The notion of time, for instance, is different between the tropics and European territory. Time doesn't have the same meaning. I'm European and I live with the past, present and future and this seems so obvious to me that I have difficulty imagining that my Asian or African interlocutor doesn't have the same time references as mine. To them everything is circular. Things and events return regularly. When this is understood, the dialogue is completely transformed.

Emanuele Coccia: Indonesia, Gabon, Galapagos, Malaysia, Tasmania, Thailand... You´ve traveled the world to observe and draw trees. What was your greatest encounter? How do you choose the trees you will draw?

Francis Hallé: You can't enjoy the same tree when you are in Africa, America, or Asia. In Africa it´s the moabi. In America it's the seringueira. In Asia it is the durian. In Europe I´m still looking for the one I like best.

I dedicate myself mainly to drawing architecture. When I'm in the forest, I always start with an ideal tree, neither too young nor too big, that reveals its architecture to the fullest. In tropical forests it's quite simple to do this because we can easily find young trees. It's quickly realized that the shape of a tree, even when it´s young, is never random. Each species has its "architectural model", that is, the growth and development of a tree follows a genetic program based on three principles: first, the distribution of branches on the trunk, which can be continuous, rhythmic – that is, a new floor is added every year — or irregular; it can also be null since many trees don't have branches, like palm trees. Then, the orientation of the branches, that can be vertical, oblique or horizontal. Finally, the position of the flowers, that can be terminal, which ends the growth of the support axis in the flower head, or lateral, which means that nothing prevents this axis from continuing to grow, that is, that it can have infinite growth.

It is extremely simple. With these three principles you have the basis of an endless combination. This large number of possible combinations is undoubtedly of great importance as the architecture of the trees that we know today - around a 100 thousand species - uses only 24 models. Any tree that you look at will respond to one of these architectures. The challenge would be to find a plant that doesn't want to conform to one of these standards!

Emanuele Coccia: In the 1970s, when you first began interested in the architectural analysis of trees, there was nothing like it on the subject. How did you get the idea to study this?

Francis Hallé: At the end of my studies, I was a Linnaean[2] botanist. To identify a plant I needed to see its flowers and fruits. Without these two characteristics I couldn't do anything. When I arrived in Ivory Coast in 1966, there were magnificent primary forests, but no flowers or fruit to behold. And when there were, the flowers were sixty meters from the ground, totally inaccessible, and the fallen fruits, rotten or injured by the fall, were impossible to identify. It was unbelievable. One day I met the chief of a Baule village and had to ask him:

"Chief, what do you call that big tree over there?"

"That's an almond from the Ivory Coast[3]"

"Chief, and how do you know? Have you seen its flowers?"

He laughed.

"Flowers of the almond from the Ivory Coast? I don't worry about that. I don't even know if it blooms".

He was an extraordinary botanist but certainly not Linean, for he had no need to see flowers and fruits to identify trees. He continued:

"Look. This tree is an almond from the Ivory Coast, that one is a Dabema, that other is an Abalé. You can see that's not the same thing".

And what changed? The architecture. I experienced that day as a truly scientific and intellectual revolution. It was possible to be a botanist without being Linean. It was from that moment on that I was able to talk about the evolution of the plant family. There are ancestors of tropical trees whose more evolved, refined and sophisticated descendants are at high latitudes in the form of herbs. We find this evolution in 90% of the plant families.

Emanuele Coccia: This plasticity, typical of the plant world, isn't found in the animal kingdom. I´ve always wondered why this architectural model, plastic in the sense of "structural", remained invisible for centuries, whether for Carl von Linné or for other naturalists and botanists.

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2. Swedish naturalist Carl von Linné (1707-1778) is the author of a general classification of natural beings (plants, animals, and minerals) according to a binomial system. He is at the origin of modern botany.

3. Terminalia ivorensis.

Francis Hallé: I don't know why this wasn't studied at Linné´s time. But in ours, I have the feeling that what is scientific needs to be very complex. The more complicated the subject is, the more it's considered intellectually legitimate. Some say that what I do isn't serious, that I work with the naked eye and that the same work could have been done in the 17th century. And it's true! It isn't difficult, my material comes down to paper and pencil, that's what I use to draw the architectures. All of this is too simple for current science to get interested in. That being said, the observation of the architecture of trees leads me to reflect on sophisticated genetic problems.

Emanuele Coccia: Indeed, and observing the trees, you also deepened the concept of reiteration.

Francis Hallé: Jean-Henri Fabre had already seen and studied the concept of reiteration. He wrote *Leçons à mon fils sur la botanique*, in which he explains that trees are columnar. Darwin had also noticed this. Then everything was forgotten. Today we know that the architecture of a big and old tree involves the concept of reiteration. Admitting that a young tree can grow into an old tree is such a disturbing idea!

When we talk about reiteration, it isn't about a seed that germinates, but of a bud that awakens: it produces a leafy stem whose roots anchor under the bark and quickly reach the ground. Next, the growth repeats the architectural model of the species, and the bearer tree then becomes a colony. The ancients understood well the parasitic character of the sprout, hence the names they gave it in various european languages: *gourmand* in French, *sucker* in English, *succhione* in Italian and *chupón* in Spanish.

With this concept of reiteration we can distinguish two types of trees, the "unitary" and the "columnar". The unitary trees are devoid of reiteration. This means that their growth is limited to their architectural model. They have a simple shape and an appealing aesthetic – they are often used for decoration. Columnar trees, in turn, reiterate in abundance. They are more modern, less beautiful than unitary trees, and above all, they live much longer. In Tasmania there's a very famous

Lomatia tasmanica shrub. It's 43.000 years old – from the time when there were only two human species, Homo sapiens and Neanderthal man – and happens to be a three kilometer-long clone. Not only is this bush alive, it isn't old at all. If we leave it alone, it will continue to live and reproduce, there´s no reason for it to die. It's fascinating! Are we facing an immortal tree that will be able to withstand even climate change? This question is open, and all this leads us to entirely renew our vision of life.

Emanuele Coccia: It's amazing how you´ve shown something that´s fundamental and very beautiful, at the same time. Botany can and must give us a completely different view of life, while biology is still very much focused on animals.

Francis Hallé: In reality, biology is almost entirely human-oriented. For many zoologists, the animal allows us to understand and experience things that are impossible to do with human beings . The idea that the animal can provide an understanding of human beings is old, going back to Greek Antiquity and to Aristotle.

With the plants I'm protected from this digression. The plant is the absolut alterity of human beings. Besides that, it doesn't move or make any noise. We judge them for this as a naturally uninteresting form of life.

Emanuele Coccia: It´s true that there's a certain neglect of humans towards plants. There's a kind of fear, I´d even say anger, of these living beings to whom we deny the possibility of life.

Francis Hallé: Fear is related to the forest, not to the plants. This feeling is very old, dating back to Roman civilization. For the Romans, the forest was the place of the "foreign": barbarians hid in the forest. Indeed, the French word *forêt* comes from the Latin *foris*, which means 'abroad'. In English, foreign is that which can´t be known, which is too far off. Maybe it's our ecological heritage from Antiquity that wants trees to continue to be considered as a material for commerce, which isn't very complimentary. We are left with that: the fear of the forest and the desire to sell wood.

Emanuele Coccia: However, your work provoked awareness on an intellectual level. Alterity began to be put into practice and accepted.

Francis Hallé: This is partly true. But that doesn't affect loggers. By the time it reaches them, there'll be no more forests. It's terrible to watch their destruction. If my contemporaries could see the primary forests of Tasmania, they´d be so amazed! They're in the other hemisphere, but at the same latitude as here in Europe. Not too far from here, in Poland, the primary forest of Bialowieza is also endangered. When I became aware of this threat, I felt that the time had come to react by promoting the rebirth of a primary forest in Western Europe, spread across several countries. This is one of my next projects. People will be able to come in, but only through the dossel, so as not to damage anything. So far nothing has been officially released, but I think it will be soon. There's a subversive side to accomplishing this project, because in our current society everything has to happen very fast. But this adventure is a gamble of more than a thousand years, a pledge on intergenerational collaboration.

Emanuele Coccia: You insist a lot about the time. The tree is one of the living beings that has the capacity of living for a long time.

Francis Hallé: Yes, and for much longer than us. Here in Montpellier, our local newspaper *Midi Libre* proposed to admire a 100-year-old olive tree. This is ridiculous, a 100-year-old olive tree is a small child! From the 2 thousand years onwards, it starts to get interesting.

Emanuele Coccia: How do you explain the longevity of trees?

Francis Hallé: There is a short-term response and a long-term response. A team of scientists from the University of Oviedo, in northern Spain, has shown that in humans, the gene methylations[4] happen throughout life, while in trees they only happen annually. The bud that opens in the spring is totally juvenile. All the genes are demethylated

4. Substitution, in a molecule, of a methyl radical by a hydrogen atom.

and gradually methylated during the summer. There are demethylases the following spring and everything starts again from scratch. The first answer then is that the tree remains young. But this is only true for a few hundred years. The second reason, which explains why some trees can live for thousands of years, is that they are capable of vegetative propagation – which human beings are absolutely incapable of! The first tree sprouts from its roots, or else it falls down and sprouts. It has 36 possibilities of vegetative propagation with no time limit. Today, only a hundred trees are considered to have such immortality.

Emanuele Coccia: The tree may have a long lifespan, but it's often threatened by its environment.

Francis Hallé: The life of a plant isn't easy because it's edible and fixed. To escape death, the first solution is simply to be much bigger and taller than its predator. Trees are in fact much more voluminous, that's what they do to keep from disappearing. The animal may eat a piece of it, even a big one, but it will continue to grow. It's the unlimited growth of the tree that allows these dimensions. They are adaptive dimensions against the predators.

Emanuele Coccia: Despite their impressive size, trees or plants aren't seen by men and women in the same way as animals. This is really impressive and starts very early. In children's books, for instance, the animals always have an identity: there´s the lion, the panther, etc.; but the plants are just green spots. It is never something accurate.

Francis Hallé: It's true. We look at the animals, but we are insensitive to trees. This comparison between plants and animals has always been extraordinarily fruitful to me. We don't cease to find differences between plants and animals in all areas. When animals eat, the energy enters their bodies through the internal surfaces, the digestive surface. With plants the opposite occurs: the energy gets in by the external surface. Observing the outer surface of the plant teaches us practically everything we need to know about it. There´s no internal environment.

It isn't hollow. We, the animals, are all hollow. We´re volume, while they´re surfaces.

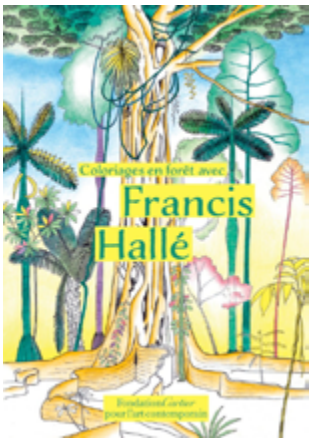
To live, we, poor animals, have to run after our food. The plant, on the other hand, feeds by exposing itself to the sun with its feet in the moist earth.

Plant excrement is the lignin molecule that serves to keep the blood vessels open. In general, the animals aren't interested in their excrement. They are actually evacuated through the back part of the body and the animals then move away as they are of no use. Plants, instead, store their excrement and use them throughout their life.

Another opposition: plants are much more mobile than animals. If a dangerous animal escapes from the zoo, it´ll be killed in 48 hours. If a seed flies out of a botanical garden and lands on a cliff 10 kilometers away, nothing will happen. Fifty years later, a some-what astute botanist thinks this strange plant reminds him of Venezuela and wonders what it's doing there. As it isn't an immediate danger, he does not even notify the authorities. The plant will multiply and that's how the cliffs of the Côte d'Azur or of the Italian Riviera are covered with plants from Venezuela. People don't even know about this. Trees have a freedom that the animals don't have. They have complete anonymity.

Emanuele Coccia: It´s lucky!

Francis Hallé: Many times the vegetable solution was despised, and we still disregard it, but in fact it's much better. If we don't change our view about the world's ecology, our societies will get worse each time. This change is still utopian at the moment, but it's really necessary, otherwise our world won't exist for much longer. It's painful for the human being because he falls from his pedestal. I think that since Copernicus, Darwin and now the pro-plant movement, the human species is declining one level at a time. It loses its central position. One day, a friend asked me: "If humans disappeared, who´d be bothered but us?" I found it a bit harsh but it´s true.



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Emanuele Coccia (1976)

Born in Fermo, Italy. Until the age of 19, studied at the Instituto Técnico Agrário Garibaldi, in Macerata, which is why he kept his eye on plants during his higher studies in philosophy. Coccia transits through important academic centers in Florence, Berlin, Freiburg, New York and Paris. He is a full professor of philosophy at EHESS in Paris. His works have been translated in several countries and propose the broadening of the perception of life, its systems and the world. In Brazil, his books "*The Life of Plants: A Metaphysics of Mixture*" (Cultura e Barbarie, 2018) and "*Metamorphoses*" (Dantes, 2020) are available. He is Colette's father.

Francis Hallé (1938)

Born in France, he studied at the Sorbonne in Paris. His two scientific specialties are tropical forest ecology and tree architecture. All of his research was devoted to tropical plants, especially those from lowland humid forests. Between 1960 and 2004, he published sixty-three scientific papers, in French, English, Spanish or Portuguese.

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