

EN

Decentralization

When it comes to functioning systems, humans tend to only see what they understand, and their comprehension is often limited to that which bears semblance to themselves. Simultaneously, humans possess the somewhat presumptuous inclination to regard themselves as the most intelligent beings.

In contrast to humans, plants diverge in countless ways. Plants are lacking brains, organs, faces and limbs. When they developed from algae to land plants in the course of their evolutionary development, they took root. The anchoring of plants in the soil contributes to the fact that plants become almost incomprehensible living beings for us. They are virtually invisible. Nevertheless, plants make up at least eighty percent of the living mass of the earth, thanks to their remarkable resilience. Probably the most classic example of this is the development of ingenious survival strategies against fire. While certain plants can tolerate fire, others entrust their reproductive and life cycles to the undergrowth. In most cases, despite disastrous fires, new shoots appear defiantly from the earth after a few months. Even when confronted with herbivorous attacks, plants, despite their immobility, usually endure.

The magic concept that describes these remarkable characteristics of plants is called *decentralization*. Whereas all animal species centralize vital functions, plants distribute them throughout their entire body. Plants, for example breathe with their entire body. The difference between concentration and *decentralization* is rather unknown, but crucial in many ways. One might say that plants solve problems and animals avoid problems. It is on the one hand true that the centralization of functions enables animals to make decisions more quickly. For plants, on the other hand, speed plays no role. For them it is more important than anything else to make a sensible decision. Animals, in evolutionary terms, have been working for centuries to optimize their escape when danger arises. Simply speaking animals avoid problems whereas plants have to find functional solutions. Their decentralized body structure provides the essential framework for this.

The plants roots are a central part of their survival. They are connected to a fungal network called mycelium. The mycelium acts as a kind of collective brain and intelligence for the plants, distributed throughout the body. The root tips of the plants, acting together as a command center, make decisions based on the information gathered to guide the growth of the roots in the right direction. This interaction of millions of root tips enables plants to continuously adapt to their environment and find solutions to their challenges. That plants are insensitive creatures is therefore a widespread but rather nonsensical assumption. According to Stefano Mancuso, an internationally renowned plant researcher, plants with their modular, cooperative and decentral organized body structure without a command center are, to a certain extent, the embodiment of modernity.

An extraordinary form of mycelium are mycorrhizal networks, which play a crucial role in the forest ecosystem. Plants and mycorrhizal fungi behave promiscuously. This means that several plants can connect to a single fungal network and several fungi can colonize the root

of a plant. Mycorrhizal networks allow the exchange of resources such as carbon, phosphorus, nitrogen and water between plants. Larger plants with better access to light and more resources can support smaller plants by providing them with energy-rich carbon compounds. Resources thus flow from areas of abundance to areas of scarcity. However, it is important to realize that this act is not merely selfless. The donation of resources does not mean any real costs for the donor plants, since carbon is not a rare commodity for them. Nevertheless, this form of resource exchange within a community shows that the forest is less about competition and rivalry and more about the distribution of resources for the benefit of the entire ecosystem. Simply put, fungi form the social network of the forest ecosystem. Whether plants are able to carry out conscious communications via common mycorrhiza networks, which are specifically sent from sender plant to recipient plant, has not yet been researched.

It's important to note that the "Wood Wide Web" metaphor has its limitations. The fungi in this network aren't merely a passive participant but an independent organism capable of solving complex spatial problems. In addition, independent fungal-mycelial networks also exist that relate organisms even if they do not connect plants. However, some fungi pose threats to plants, consuming them from either inside or outside.

These insights into forest ecosystems prompt us to reflect on our society. How can we promote decentralized organization and cooperation? Who can assume the role of fungi in our society, acting as intermediaries and weavers of connections?

In the 1980s, the musicologist Louis Sarno documented the fascinating way in which the women of the Aka people work together to gather mushrooms. As they walk through the forest in search of mushrooms, they create the underground network of a mycelial system with their steps and sing their individual melodies at the same time. There is no hierarchy or dominant voice, but a decentralized collaboration in which each voice retains its own identity and yet merges with the others. The recording "Women gathering mushrooms" shows how this organic way of working allows the women to explore freely and individually while still being part of a larger whole. There is no predetermined structure or central planning, yet a fascinating and functioning form of collaboration emerges from this.

Essay accompanying the installation *Decentralization* by Andrea Sommer and Luzi Paulin Simeon

References: *The Nation of Plants* by Stefano Mancuso, *Entangled Life* by Merlin Sheldrake

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