

To Live as the Trees Do

Noah Johnson

In Peter Kropotkin's 1902 *Mutual Aid: A Factor of Evolution*, countless examples are provided of cooperation among animals, countering the social Darwinist concept of ruthless competition as the framework for both nature and human society.

Yet a frustrating exception to the seemingly ubiquitous importance of mutual aid was the apparent hyper-individualism of plants. Kropotkin dismissed this as due to their immobility, thus making competition a requirement for their survival. It is true that plants seem quite solitary, each concerned exclusively for its own survival.

For much of agriculture as well, monoculture is seen as the most efficient method of producing food and materials. In forestry, for instance, endless acres of a single lumber species are planted in flawless rows, emulating the homogenous tilled fields of industrial agriculture, though on a larger scale. At first glance, this method seems quite reasonable.

After all, the goal of agriculture is to maximize production of the desired crop. Therefore, monocultures represent an avoidance of competition by removing undesired species that are assumed to interfere with the growth of the desired crop. Similarly, a superficial glance at a forest likely yields an image of numerous struggling species, resulting in the monocultures of commercial forestry intended to remove competition and aid the growth of the target species.

In recent years, however, the concept of the solitary tree has been shown to be largely a myth. A diverse, natural forest, that is the antithesis of modern monoculture, is a massive network of mutual aid, both between trees of the same species and even across species. They make up a colossal system of communication and protection as strong as the mutual aid systems used by animals described by Kropotkin.

Trees, like animals, find more success through cooperation than competition, and this cooperation can take on many forms from the sharing of nutrients to protection from predators. Enabled by a system of fungi connecting the root systems of plants (mycorrhizal fungi), trees can perform a sort of communication for the purpose of mutual aid.

Perhaps the clearest example of this is in nutrient transfer via fungi-facilitated root connections. The researcher to first discover these connections, Susanne Simard, said in a *Yale Environment 360* interview that the fungal network "connects one tree root system to another tree root system, so that nutrients and carbon and water can exchange between the trees." When asked if trees know which members of the system require the most aid, Simard confirmed, mentioning that she noted during research that a shaded Douglas fir received more carbon from a neighboring birch, while in the fall, when the birch had lost its leaves, it in turn received carbon from the evergreen fir.

Similarly, forester and author of *The Hidden Life of Trees*, Peter Wohlleben, discovered an ancient beech stump, kept alive by neighboring beeches despite seemingly offering nothing to them in return, demonstrating that nutrient transfer can exist across species or within a species and targets the tree with the greatest need. In fact, it was even found that struggling Douglas Fir transfer nutrients to younger Ponderosa Pine, benefiting the health of the forest as a whole as opposed to only themselves.

In addition to the important function of nutrient transfer, trees are also able to communicate information via the mycorrhizal network and other methods. For instance, acacia trees were found to release a scent warning nearby trees of feeding giraffes which then produced a toxin to ward off the herbivores.

Some species of trees synchronize their production of seeds, thus creating such an abundance that foraging animals are unable to consume them all, and some seeds are allowed to grow. And, mycorrhizal fungi aid in a so called “wood-wide web” in which trees warn each other of environmental dangers such as drought or pests.

So then, what is the significance of trees being cooperative rather than solitary beings? For one, trees provide yet another example of mutual aid in nature, contributing to the already significant pool of examples showing nature as web of cooperation. The forest ecosystem arguably provides one of the largest and most convincing examples of mutual aid in the natural world.

For millennia, humans of numerous cultures have been awed by the sublimity and apparent sentience of the forest as a single living being. Even today, the endless commodification of forests has not permeated society so deeply as to uproot the sense of wonder that comes with standing in an old growth forest.

Additionally, mutual aid benefits the forests themselves, lending an extra layer of adaptability so crucial in withstanding modern environmental disasters. However, while providing a convincing example of the salience of mutual aid as well as directly benefiting the forest ecosystem itself are both significant consequences of mutual aid in trees, perhaps the most consequential factor is its implications for human societies.

When examining the characteristics of mutual aid among trees, there are a few notable elements. First, it is a network of cooperation and not simply one-time transfers of nutrients.

Healthy trees will supply struggling trees with nutrients and will receive nutrients in turn should they begin to struggle. Second, the mutual aid network is not hierarchical. There is no single tree directing the flow of nutrients, no tree dictating who shall receive aid and who shall go without it, but rather a constant web of individuals contributing to members of the network in need and accepting aid themselves when needed.

Finally, the forest mutual aid network is not homogenous. While oaks may help oaks and beeches may help beeches, mutual aid functions across species as well, with Douglas fir aiding birch and even mycorrhizal fungi working in partnership with individual trees. Thus, mutual aid among trees is cooperative, non-hierarchical, and heterogeneous.

Mutual aid has always been a component of human societies just as it is a component of nature. Some may see the above connections as overly anthropomorphizing and they likely are to an extent.

However, despite considerable differences between humans and trees, humans are ultimately a part of nature and frequently participate in mutual aid, despite even the relentless avarice of capitalism. Like mutual aid among trees, mutual aid among people has been and must be based upon cooperation, not charity, equality, not hierarchy, and inclusion, not selective or nationalistic aid.

As humans—individual beings with passions, hopes, and identities—we should not live the capitalist dream of materialism and self-interest. We should not hate the Other or neglect our creative and spiritual well-being in an endless chase for that extra dollar, but rather, live by compassion and mutual aid.

We should be the roots entering the smallest crack and fracturing the sturdiest foundation, linking together like a vast mycorrhizal web until the forest breaks through the pavement.

In essence, we should live as the trees do.

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