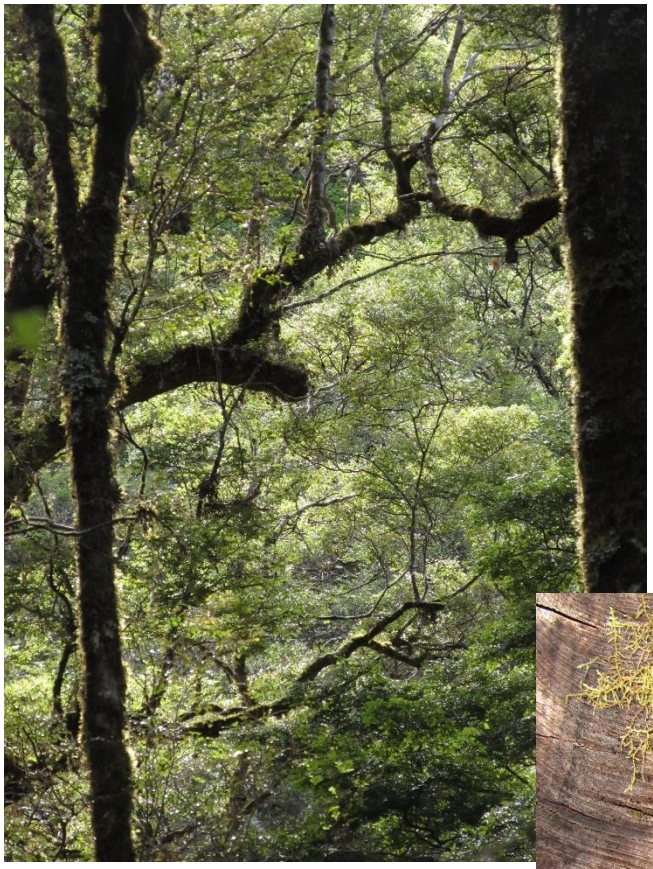
Trees as Safe to Fail Experimenters

One of the concepts of working in complexity that I and the people I work with is the Safe to Fail Experiment. The scientists I hang out with struggle with how it is not a scientific experiment. The government leaders struggle with the implied risk that is failure. I struggle with good examples.

The other day sitting in the forest I realised that the trees around me were constantly experimenting and doing it so they could expand successful experiments and shut down unsuccessful ones.



Trees have the challenge of getting their solar panel leaves into the best light and that is a constantly changing situation. How do they adapt. They experiment by putting out branches as experiments and getting feedback on how well the experiment is working. If the branch is getting good light, and possibly more light (I don't know how trees decide), that experiment is grown. If the branch doesn't get good light it is closed down. The same will be happening under ground with roots going out and getting feedback on where the good stuff is. I have found beech roots 15 meters from the nearest tree happily slurping on a nicely composted vege garden.

New Zealand Beech trees (Tawhai) have a game changing experimental model to get a market advantage. The seedlings grow and get up to a height between 20 and 50 cm and if there is not enough light the seedling goes into snooze mode and does the minimum to keep the system ticking away for many years. There is a constant feedback system going and a few smaller experiments to test if the light situation is changing. If more light occurs (like a nearby tree falls down) the seedling goes into rocket mode and grows hard out to the light. This growing a bit and waiting for an advantage is one reason that the beech species were able to be the dominant forest cover post ice age for most of the South Island/Te Waka a Maui.

What about the safe to fail part? There seem to be two levels of what is safe. One is how much energy to put into branches that might not work – this seems to show up in how much water and nutrients there are to risk on experiments. The aim is to stay alive as a tree. As the example of the sleepy seedlings show this is a long game. The other level is the thrivability of the species. What matters here is the success of the species as a whole and individuals are not so important. In this space individual trees are experiments – tests at the edge of the 'normal' range to see if the species can go a bit higher, drier or wetter. Each 'edge' tree is an experiment.

There may be a third level of safe around the strength and thrivability of the ecosystem. I wonder what the experiments are here.

I don't know enough about what is happening in trees and in the whole ecosystem to be really sure about the Safe to Fail Experiments in forests. What I do know is that time in a healthy forest is fertile time to think about what a good Safe to fail experiment looks like. I see them working beautifully and helping systems thrive for millions of years.

Warm regards
Scott Nicol

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