Plan views of mycorrhizas observed on 1- and 2-year-old Scots pine seedlings from bareroot forest nurseries. From: Maria Rudawska and Tomasz Leski, *Ectomycorrhizal Fungal Assemblages of Nursery-Grown Scots Pine are Influenced by Age of the Seedlings.* In: Forests, 2021.

WE ENCOUNTER OTHERS IN FORM
ANNA LOWENHAUPT TSING AND FEIFEI ZHOU

As designers, we fungi are masters of form. And we know things that you seem to have forgotten. Unlike your human designers, we don't think of form in an abstract sense – creativity in a vacuum. We know that form emerges in encounters with others, and we know that form structures future encounters. Like it or not, form *does things* – and you may not like what it does. But ignore it at your peril. Let Fei and Anna tell you about us, and maybe you'll start thinking differently about your destructive habits. Yes, we'll tell you what's wrong with modern human design.

You probably know our mushrooms, which are our wombs. We design them to carry and marry our spores through encounters with wind, rain, insects and even the digestive systems of mammals like yourselves. When we say that we only reproduce *in the encounter*, we don't just mean sex (and the mixing of genes), but, equally importantly, encounters with other kinds of beings, living and not living, that make it possible for the next generation to live. We depend on *social reproduction*, the incessant renewal of life and society – and this means much more than sex. We make renewal possible through form.

Hi, I'm Amanita. I have an elegant, colorful cap raised on a stalk. Underneath you'll find a wheel of hanging gills like spokes. These produce my spores. I've designed them so that even the slightest breath of wind, wafting under my cap, will lift them up and out to explore the world. Through form, the wind and I work together to distribute my spores.

Hi, I'm Nidula, but you can call me "bird's nest fungus." My nests of spores look like tiny birds' eggs. I've designed them so that a drop of rain can splash them out of the nest – and into the world. Through form, the rain and I work together to distribute my spores.

It's not just through our mushrooms that we design for encounters. In the soil, we use the form of our bodies to make a living – and to make a world for ourselves and others.

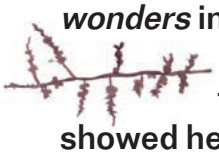
Hi, I'm Dactylella. I make a set of nooses in the soil. When a nematode (a tiny soil worm) crawls through them, my nooses swell and tighten, trapping the squirming creature. They're delicious! Don't assume that we fungi are just passive absorbers. By making use of the form of the noose, I become a hunter.

One of our greatest design accomplishments is the work we do together with tree roots. Talk about social reproduction – forests could not grow without us! We are farmers, but we're not like modern human farmers who care only about profits, forgetting living worlds. Our designs support forest ecologies for many beings.

Trees cooperate with us through their form. They send out short roots, hoping to encounter one of us. If no fungus comes to meet them, those short roots shrivel and disappear. But if we take them up on the encounter, we start making forms together. Many of us know how to wrap ourselves around those short roots, stimulating them to make all kinds of new forms. The arrangement suits us *and* the trees: the trees feed us, while our long hyphae search for water and nutrients to take good care of the trees.

There's no reason for you humans to ignore the world of fungi and roots. Just go to a place with trees and push away the soil for a centimeter or two. (Not all trees work with us, but most do.) Sniff the dirt; you'll smell us. And soon enough, you'll start seeing mycorrhiza, our joint production with roots (*myco* = fungus; *rhiza* = root). Mycorrhiza (at least the kinds that wrap around roots and make new root-tip forms) are perfectly visible to human eyes. If you want to see the wonders of design in action, this is a great place to look.

And what beautiful forms we make together! As we coil, stretch, fluff and spiral, we encourage the tree roots to form their core root tips. Pines  always make Y-shapes for us; we stimulate them to branch that way. Spruces and Douglas firs  tend to make feather shapes.  Broadleaf trees often make more sinuous shapes.

Then we elaborate. Different fungi make different forms with each kind of tree. Consider the forms we showed Anna that can be found on just one species of pine, *Pinus contorta* ("lodgepole pine") at a former brown coal mine in central Denmark. (See *un/natural wonders* in Room 3 of our exhibit.) A small, dark *Inocybe* species  showed Anna its dark "pompoms," set close along the pine's major roots. In contrast, *Paxillus involutus* showed her fuzzy white Y-forms.  Under the best conditions, these formed huge, dense clusters. Then the golden felt-like mats offered by *Pisolithus arhizus* were different again.  We fungi, each in our distinctive ways, work with roots to create form. Stick your finger in the dirt – you'll see us!

It's not just species differences that determine forms. Different seasons offer us different resources for design, such as water or heat. Different niches create different opportunities. A dead log as shelter can prevent us drying out. Sand can be handy, as we work our way through its grains. But some of us, too, know how to penetrate even the hardest and driest soils. We are masters of adversity, ready to make the most of good and difficult conditions alike.

Just as *Dactylella* uses noose forms for hunting, our mycorrhizal fungi use root forms for farming and foraging. We design *in* the encounter – as well as *for* the encounter. In the encounter, we work with trees to make root designs. These create common superorganisms – trees plus fungi – that are set to forage together. At the top of our collective being, we convert sunlight into sugar. At the bottom, we find water, even far from the tree. These forms we make together are tools for foraging and sharing. We *work* together and *become* together. We like the term "sympoiesis," which means "making with." The forms we assume through sympoiesis allow us to build forest ecologies. Our forms extend and encourage multispecies world building: that's why we say that we are masters of design.

For decades, you humans have prided yourselves on being masters of form through modern design, from the Eames chair to the Sydney Opera House. But not all designs are human-centric, you might argue, given the increasing number of environmentally-themed design exhibitions and biennales. Yet the forms you celebrate are often imaginary. A chair, a brick or a façade that was designed only to be placed in an empty museum space is disguised as "ecologically focused", but it lacks any rigorous

practical responsibility. These are not material forms in active encounter; they are projections of ideas – static, detached and aesthetically-centered. They exist in isolation, without context or consequences. They are designed to be appreciated through two-dimensional images, not through interactions that would allow forms to age, evolve, break down and re-form. By celebrating these static images, the design industry creates the illusion that it is addressing the environmental crisis, while in reality enabling corporations to continue with business as usual.

Time leaves its marks on your hands: calluses, cuts and burns – your form carries the story of your encounters. Our fungal form is similar: it reveals our paths, our connections, our health, and the health of the underground worlds we inhabit. Perhaps it's time to ask: What is the point of your form if it is never touched, never sensed, never worn down or re-formed?

Form is never fixed. It must withstand change. It is temporal, ephemeral and constantly evolving. There's a phrase in Chinese, "一劳永逸", or *yi lao yong yi*, which describes a single action that maintains perpetual peace in a maintenance-free way. With the invention of civilizational materials like plastic and concrete, you have grown obsessed with this fantasy of permanent form in the way you build your cities, houses and products. But this is an abstraction of form – as if it were in charge of everything, as if it could discipline or exclude the world around it. By now, however, you should have learned that it is impossible to block the effects of form as it communicates with the world. Worried about urban flooding? That is an example of form encountering the world: the concrete roads and walls of modernist urban design block the absorption and flow of water, redirecting floods into poorer neighborhoods. Concerned about ever-deadlier pandemics? Consider the form with which you raise modern livestock in industrial agriculture, with its overcrowding and genetic homogeneity. This production factory is a feast for emerging pathogens. Form is never just an object; it sets up relationships between beings. Human-built infrastructure is an essential part of this. If you humans want to live well with others, you might start by considering how the forms you make affect the beings around them: not just beings somewhere out there, but your intimate neighbors, both human and non-human.

Anna Lowenhaupt Tsing is an anthropologist who has conducted extensive fieldwork on the ecological and economic roles of fungi, as well as the intricate connections between humans and non-humans. Feifei Zhou is an architect and artist whose work investigates the ecological and social impact of the built environment on both local and planetary scales. Tsing and Zhou are the curators of the exhibition *FUNGI: Anarchist Designers*.

This manifesto is part of *FUNGI: Anarchist Designers*. This exhibition, curated by Tsing and Zhou, presents fungi as radical designers in a world beyond human control. On show at the Nieuwe Instituut from 21 November 2025 to 9 August 2026. With the support of het Cultuurfonds, Mondriaan Fonds, Graham Foundation and Iona Stichting.