



BOOKS *et al.*

MYCOLOGY

The fantastical lives of fungi

An ode to an underappreciated life form reminds readers that the mundane can be sublime

By Rob Dunn

Now more than ever, it is useful to step outside at night and remember the grandeur of the Universe. You can do so while taking out the trash or while wandering the neighborhood wondering what will come over the next months. If you are lucky, you will pause long enough, looking up, to be humbled and awed by the sublimity and scale of what surrounds us. With his new book, *Entangled Life*, Merlin Sheldrake reminded me that one can have a similarly transcendent experience by pausing and looking down.

Sheldrake's book is an ode to fungi: the fungi that call to pigs from beneath the earth; the fungi that colonized the land from the sea and made it possible for plants to move ashore; the fungi that connect trees in a network, a web, an exchange system; the fungi that take control of minds (those of insects and that of the writer); and fungi that produce alcohol and enable the making of bread, which have been dancing with humanity since before the dawn of agriculture. More than anything else, *Entangled Life* is an ode to other ways of being.

Fungi can assume dozens of different sexes and can transform even the most re-

calcitrant nonlife (be it wood or even rock) into life. They can sense what we might call smells or tastes with the entirety of their filamentous bodies. The fungal world is everywhere and yet entirely foreign.

Sheldrake is a newly minted fungal biologist, having only recently earned his doctorate. Much of his work has been conducted on Barro Colorado Island in Panama, where he studies the interactions among trees via fungi. He writes about some of this work but also about interactions with fungi that will be more familiar to nonmycologists. I finished the book eager to ferment anything and everything, dig through soil, and go out and sniff mushrooms.

In the book's first chapter, Sheldrake considers truffles, fungi that live underground through diverse interactions with other beings.

As he explains, truffles partner with trees in complex systems of exchange. But they also partner with mammals such as pigs, which gather and disperse their underground fruiting bodies. Here, Sheldrake shares his experience following a truffle dog named Dante that, like Sheldrake, can detect signs of fungi that others miss.

Entangled Life is full of details, but Sheldrake tends to use those details to reveal broader truths. For example, he writes about the intricate interactions between the fungi

Bioluminescence illuminates a ghost mushroom (*Omphalotus nidiformis*) in Australia.

and algae that make up lichens, but while doing so he considers the boundaries between one species and the next.

In reading *Entangled Life*, it becomes clear that when we perceive fungi, we often do so with metaphors and through the lens of our own limited senses. Whereas we communicate with words and symbols, theirs is a realm of biochemical messages and exchanges. In chapter six and elsewhere in the book, Sheldrake considers the underground web of connections between fungi and plants, tallying the many systems to which these connections have been compared: social networks, rivers, the internet, labyrinths, the interrelated yet separate organs in the human body. Fungal connections are like all of these things, and yet they are also sufficiently singular as to be beyond easy description.

It is perhaps only when fungi manipulate our own bodies that we fully realize their powers. In chapter four, Sheldrake describes the mind-altering drugs produced by fungi, using the story of his own LSD trip to consider the diverse ways fungi convince animals to do their bidding. He returns to this theme in chapter eight, considering the ways in which yeasts have shaped human society. We describe ourselves as "using" yeasts to make beer, wine, and sourdough bread, but Sheldrake makes clear that yeasts, by producing aromas and alcohols that please and alter our minds, are actually using us to produce more of themselves.

I have been working on and reading and writing about fungi for a decade. And yet, nearly every page of this book contained either an observation so interesting or a turn of phrase so lovely that I was moved to slow down, stop, and reread. At one point, for example, Sheldrake recounts making cider from apples harvested from trees that might have descended from Isaac Newton's apple tree, writing: "I called the cider Gravity and lay heavy and reeling under the influence of yeast's prodigious metabolism."

It is easy, as a biologist, to grow numb to nature: numbed by the ones and zeroes of spreadsheets, numbed by emails and virtual meetings. This book rocked me into remembering that nature, especially fungal nature, is big and encompassing and creative and destructive. It reminded me that fungi are, like the Universe, sublime. ■



Entangled Life: How Fungi Make Our Worlds, Change Our Minds, and Shape Our Futures
Merlin Sheldrake
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