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The Art of Mushroom Foraging: A Phenomenological Inquiry

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This essay is an inquiry into the perceptual and cognitive qualities of mushroom foraging. Mushrooming is a delicate and phenomenologically rich practice, one which infuses elegant sensory organization with simple rules of thumb, or heuristics. In Southern Finland, where I am from, it is also one of the final frontiers of traditional knowledge and practice—a bastion for practical connection with nature. Mushroom foraging is an art of active perception that deserves to be studied with patience, taught with rigor, and passed onto future generations with contagious enthusiasm. What follows is a phenomenological account of my own foraging experiences.

The forest is colored with a splendor of autumnal hues, and the fleshy fruiting bodies of fungi finally reach toward the crisp and humid air, witnessing what is left of the boreal sunlight. As children, our parents and grandparents, as with generations before, introduced us to the delicate practice of mushroom foraging. Gumboots on and mushroom knives in our baskets, we set forth to traverse the mossy, brisk, and mildly undulating landscapes of the forests of South Eastern Finland. There is little to fear when mushrooming, although mild precautions are taken in case of adders, gadflies, and mosquitoes, or perhaps in the very unlikely event of an encounter with a brown bear. Curiously, the most perilous aspect of mushroom foraging is the mushroom itself. This is evident in the old adage: "Every mushroom is edible—but some only once."

Amanita virosa, the destroying angel. *Cortinarius rubellus*, the deadly webcap. *Paxillus involutus*, the poison pax. The common names of these species reveal the gist: a single mistake with identification and you may well be done for. A forager generally enters the woodland or marsh equipped with but snippets of traditional knowledge, and preferably, an identification book. Yet, unless you happen to be a trained mycologist, even an illustrated guide book often comes short. Mushroom development and morphogenesis are highly variant, and local populations might exhibit unusual color, shape, and size. Often an edible species looks surprisingly alike its toxic, potentially deadly, relative.

"How do you *know* what to forage?" This question was asked by a friend visiting me from a country where little, if any, mushrooming is practiced. I, personally, can confidently identify perhaps a few dozen mushroom species—a humble feat at best compared to true enthusiasts. However, during our excursion to a local forest, it seemed to my friend that I identified most of the tens of encountered species of fungi. The question, "What about this one—is it edible?" was always followed by simple, automated, Boolean values: "Yes / No." But how do you *know*?

The key to mushrooming is in heuristics, or rules of thumb. This is, I believe, a feat of ecological rationality,[1] where a little information turns out to be surprisingly adaptive. Decisions are made with fast and frugal rules, which are always applied in the domain of mushrooming. The simpler the ruleset, the less likely a painful or fatal mistake. The following are some key rules of thumb I learned from an early age:

1. Harvest only the mushrooms identified as edible, unless you carry a separate container for mushrooms awaiting later identification.
2. A catch is either edible or non-edible. No uncertainty is accepted. The law of the excluded middle applies.
3. Knowingly avoid mushrooms which are difficult to identify. Where I am from, these particularly include many white mushrooms, owing to their similarity with the deadly *Amanita virosa*, the destroying angel.
4. Only harvest whole mushrooms, including the entire stipe and base, to ensure correct identification.
5. Identify the mushroom twice: Once when you harvest it, and once more at home before you clean and process it.
6. If you are inexperienced, only forage with a more experienced acquaintance. (All of the above rules still apply.)

Thus, my answer to my friend followed the subsequent logic: "I do not *know* all the mushrooms you have inquired about, but my heuristics nonetheless provide an answer to your question. I simply exclude the middle: If I can't identify it, it isn't edible. Albeit imperfect, these highly adaptive rules of thumb, passed from generation to generation, have prevented me from making a single mistake, whilst also affording hefty baskets of

fungi." It follows that foragers not only steadily learn-in-practice to identify new species, but also apply cautious heuristics to avoid overconfident learning, preventing potentially deadly mistakes. One does not learn all the details of mushrooming first, and then enter the forest. One starts with simple, conservative, yet generalizable rules, building knowledge step by step, until the art of mushrooming is slowly mastered. But even for advanced foragers, cautious heuristics apply. I, for one, still do not bother with some white mushrooms.

As one progresses in the art of mushroom foraging, identification takes increasingly complex dimensions. Foraging becomes a deep inquiry into the variegated qualities of fungi. A mushroom is perhaps most intuitively identified by studying its visual form. Cap morphology, underside, color, and surface are good places to start, as is the width, length, and shape of the mushroom's stipe. However, since mushroom species may look remarkably similar, often two species can only be told apart by utilizing other sensory cues. These include olfactory qualities, as mushrooms smell remarkably different. For instance, *Russula xerampelina* smells of seafood, whereas the curry milk-cap (*Lactarius camphoratus*), as the name implies, smells of curry and spice.

Distinguishing between tactile qualities also comes in handy. Is the surface of the mushroom rough, slimy, or dry? Is it hard or soft? Many mushroom species react to touch with an immediate or delayed change of color. Some boletes turn blue in their sponges after contact, for example. Identification by taste is also possible, although this is absolutely not recommended before the identification process has been narrowed down to non-toxic species. The heuristics also get more advanced with progress. Where I am from, any fungi of the genera *Lactarius* (milk-caps), which bleeds white milk when cut, is edible. Mushrooming in this sense is a thoroughly phenomenological practice, one that utilizes all the knowledge, experience, and sensory information available to the forager. It is a study and practice of mushroom Gestalts, or wholes. A mushroom should never be identified by any one isolated feature.

There is, however, more to the ecological or practical rationality of foraging. Selective adaptation to sensory information is helpful in terms of safety, but also in terms of catch. A forager does not generally enter a forest without prior experience and knowledge. We have a curious word in my native language, Finnish, for this: *apaja*. *Apaja* loosely translates into "area known to have plentiful catch," entailing a higher prior probability for encounter. I know, among several others, of chanterelle *apaja*, bolete *apaja*, milk-cap *apaja*, and my personal favourites, yellowfoot and black trumpet *apaja*. Curiously, knowledge of an *apaja*, whilst socially transmitted, is often kept a guarded secret within an in-group. An unwritten rule applies: You do not talk about an *apaja* with strangers.

An *apaja* is generally understood as a physical and material space in the environment, as a location a forager enters. Upon closer inspection, though, this is not entirely accurate. An *apaja* is more akin to a predictive cognitive map, which is validated against the ecological

information harvested from the directly perceivable environment. Specifically, an *apaja* is a prior expectation, a prediction, pertaining to the distribution of mushroom species in the environment. Usually this cognitive map transfers well onto the physical environment, but this is not always the case. Abnormal weather conditions—drought, for instance—may result in the growth of unexpected species in an otherwise familiar environment.

Equipped with prior predictions of species distribution, when entering a known *apaja*, foragers tune their perceptive organs accordingly. This predictive mode of the mind has been studied in detail within a field of cognitive science known as predictive processing, which posits that organisms engage in active attempts at predicting their environments.[2] Thus, when entering an area with certain expectations, the forager selectively and efficiently scans the area for the predicted color, smell, and form. A skillful forager will, with a short glance at topology and terrain, tacitly know where to look further. With yellowfeet (*Craterellus tubaeformis*), for instance, the predicted color of catch is yellow and greyish-brown. Expected terrain is mossy, moist, and sloping. As a result, the forager scans these landscapes and modulates their perceptual domain to increase the gain and salience of yellowfoot-like appearances. A fallen yellow leaf often invites the forager to circle the target and seek further identification, until high expectation meets prediction error and disappointment.

Every autumn, the prime season for mushroom foraging, it takes a while to attune once again to this perceptive and predictive process, although mastery of the art is regained promptly. Suddenly, the act of expecting yellowfeet at a trusty *apaja* bears fruit. Out of nowhere, they appear in abundance, and the sight of one affords neighbors in the tens or hundreds. As confidence grows, it appears like the mushrooms are predicted into existence. And there is little reason for interrupting this sustained flow of scanning, perceiving, and picking when a catch is plentiful. Often this flow goes so uninterrupted that the forager might not notice the complete numbing of their frozen fingers. Scanning for yellowfeet form and terrain also at times entails finding oneself ignorantly walking past other edible species. Often, when foraging for yellowfeet, I only give *Craterellus cornucopioides*, commonly known as "the trumpet of the dead," the exception for interruption. For this black chanterelle, despite its unwelcoming name, is the most noble of edible Nordic mushrooms, and is far less common than its yellow cousins.

Scanning the underbrush and harvesting the sensory environment takes its toll on cognition. I have learned to appreciate what my mathematics teacher taught us at primary school: Mushrooming is the most demanding of cognitive efforts, far more so than mathematics. It does not take long until the heightened levels of perception grow weary on the mind, all the while the early autumn sunset alerts the forager to the brevity of the Nordic mushroom season and to the onset of a long, cold winter. The task isn't over yet, however, since the catch still requires cleaning-up and preparation. There's nothing like a good-night's sleep after a day of foraging, although sleep comes with a curious side effect. With eyes closed, and occasionally even when open, one perceives

images of growing mushrooms, as if they were burnt onto the retina. Mushrooming truly is an act of enhanced imagination, and it does not take a hallucinogenic mushroom to induce hallucinations of mushrooms.

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Notes

[1] Peter M. Todd and Gerd Gigerenzer, *Ecological Rationality: Intelligence in the World* (Oxford: Oxford University Press, 2012).

[2] Karl Friston, "The Mathematics of Mind-Time," *Aeon,* May 18, 2017.