

A black and white photograph of a rocky landscape. In the foreground, there are several large, smooth, rounded rocks. A path or streambed winds through the middle ground, leading towards a larger, more rugged rock formation in the background. The lighting creates strong shadows and highlights, emphasizing the textures of the rocks and the ground.

THE WAY OF NATURAL HISTORY

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Attending to the Beautiful Mess of the World

dren look blankly at their guide. These children live in the shade of five-hundred-year-old Douglas-firs. How can it be that they do not recognize these giant beings that live in their neighborhood, that have stood here, tough and serene, since before science discovered its method?

Freed from the entrapment of an adult lecture, the kids tumble like puppies down the forest lane. When one spots the rough-skinned newt sauntering on wet asphalt, they all freeze, stare, and go silent, magnetized by the oddness of its orange belly, brown back, and translucent handlike appendages. They especially love hearing that the newt is poisonous, that after handling it they must all wash their hands. They love the danger, the taming power of the small. It sets loose a featherweight bout of animal stories.

"That's nothing. You should see the Pacific giants!" says Fang, gesturing wider than his torso to demonstrate their impressive size. He recounts how the salamanders, black and vicious, swaggered up when he and his father went fishing, how they grabbed the fish guts, thrashing their heads all around like monsters to consume the slime.

"Yeah? Well, I've seen lamprey eels that swam up the McKenzie all the way into Lookout Creek!" brags Caos. He points to the rivulet tumbling past the parking lot.

The newt has brought them back from their boredom into what Walt Whitman called the "costless, divine, original concrete."

I have come to spend a week at the H. J. Andrews Experimental Forest, one of twenty-six Long Term Ecological Research sites ranging from Alaska to the Caribbean to Antarctica funded by the National Science Foundation. The Andrews, flanking the western slope of the Cascade Range, occupies the drainage basin

When the fifth and sixth graders from the McKenzie River Christian School arrive at forest headquarters, each kid wears a name tag made from a slice of wood that looks like a sugar cookie. The cookies hang around their necks, announcing the camp names they have chosen for the field trip: Fang, Dark Dragon, Caos, Monkey Girl, Money Maker. They show little interest in the weather station that measures temperature, wind, chemistry of rain, weight of snow, the sensors downloading data every hour. They perk up at the sight of a stainless steel mercury collector, the tank sporting robotic arms that slide its cover into place to protect a rain sample. They don't seem to hear the weatherman's words as I copy them down in my field notebook. "Rain in Ohio comes down strong as vinegar and eats paint." "Some of the best rain in America comes down right here in Oregon." The kids shuffle, uninterested in the meteorologist's homily.

Asked if they ever have seen an old-growth forest, the chil-

of Lookout Creek, a tributary of the Blue River, the McKenzie River, the Willamette, and finally the Columbia, which dumps out into the Pacific Ocean. This is one of the most studied forests in the world, a 15,000-acre research site established in 1948, when "sawlog foresters" helped the postwar nation rebuild through a grand investment on the domestic front.

Among the forests more famous subjects of scrutiny are dead logs. Begun in 1985, the log decomposition study focuses on two-foot-diameter timbers placed on the forest floor to rot. The project will last two hundred years, the time projected for natural processes to turn the tree trunks to dirt. Every month or so researchers slice a giant cookie off the end of the logs. They take note of rot, fungus, bark beetles. They analyze the cookies in the lab. Dead logs are one of the most critical components of the forest ecosystem within the first few years of the tree's death, as organisms take advantage of new resources. Ongoing studies will look at how much nutrition logs contribute to the forest and how much carbon dioxide they release into the atmosphere. The study spawned the term "morticulture," connoting that attention to the dead has relevance to the nurture of the living.

Another celebrity of the Andrews is the northern spotted owl, a keystone species for Pacific Northwest forest health. If owls go, that loss is a sign that an essential life supporting complexity has gone. The northern spotted owl has been vilified, polemical, eco-terrorized, and reduced to the size of a bumper sticker. Eco-extremists who advocate a no-touch purity for the forest haven't helped by sabotaging forest road lockboxes with broken glass and, in one case, a loaded firearm aimed at the ranger unlocking the box. Pragmatists say that more loggers have lost their jobs to the industrialization of logging and plywood manufacture than to ecosystem protection. Try asking

a lumberjack on unemployment to take comfort in that reasoning. It's easier for him to blame the regulator than the operator who might give him a job. The phrase "northern spotted owl" barely refers to the creature any longer, so debased has it become with political rhetoric. Who still sees the owl when its name is spoken? I'm drawn to the place in order to detox from such politics, to see the bird, and try to bear witness to the terms of its existence.

I welcomed the invitation to spend time in the experimental forest and participate in a new project, Long Term Ecological Reflections, spurred by philosopher Kathleen Dean Moore and geologist Fred Swanson, a concomitant to scientific work being done under the umbrella of Long Term Ecological Research. I am participating in a two-hundred-year-long experiment bringing writers and poets into the forest to sample key research sites and spend time with scientists in the field. My only obligation is to observe, reflect, and write. In science an experiment is governed by a method. There are controls, limitations, rules, hypotheses. It must produce empirical evidence. Its conclusions must be verifiable, repeatable by another scientist. An experiment in science adds to collective knowledge. Earth is round, not flat, and circles the sun. Nearly everyone on Earth knows this, one would hope, and these facts are not subject to reasonable argument, aesthetic judgment, or cultural relativism.

In correspondence I asked Fred Swanson what he means when he uses the word "experiment."

"Funny you should ask," he replied. "Some local scientists have been discussing this (with some heat). In a narrow science sense an experiment uses alternative treatments to test hypotheses—properties of a standard agronomic experiment include several rather different treatments (for example, levels of fertilization or cutting), replication (multiple plots with the

same treatment), random assignment of treatments to plots, pre-treatment measurements . . .

"On the other hand," Swanson continued, "we have the more casual use of experiment, as if just trying something out and seeing how it works. In field ecology and geology it can be very difficult to conduct good experiments. One usually just starts out observing to get the drift of how the world is working. Creative flashes in science often step beyond the rigidity of the experimental process, coming in leaps of wonderment and faith."

In poetry an experiment is governed by freedom. It dispenses with received forms, levels of diction, metrical conventions, and even syntactical rules. It may favor process over product, music over meaning, disjunction over coherence. It is unique, unrepeatable. An experiment in poetry adds to the sense of depth, complexity, mystery, and feeling in the world. If there is a "poetic method," it is to free oneself from method and enter into the excitement of creating something new and true to a very individual experience and voice. Poetry's more subversive practitioners (from Dada to homophonic translation to Flarf) challenge rationality through pranks, games, and erasure of artistic "value." They use method to leap beyond method, perhaps in the same way scientists often make their surprise findings through leaps.

The hope in the Andrews is that by careful and sustained observation, a testimony on behalf of the forest will help to keep it alive—and that applied science and applied humanities will braid a solid working relationship. But I wondered, if poetry is to be the equal partner of science in this project, would I need a hypothesis?

On a warm May afternoon, Fred drives me upslope along Forest Road 130 behind the Andrews headquarters through a collage

of forest types that are the result of varied logging strategies tried out over recent years. He is a tall, lean timber of a man, gray-bearded as the licheny Northwest trees, with a gentle yet intense manner. He tells me about the sites he'd like me to visit. "You might want to go sit on that gravel bar in Lookout Creek." It feels more like conversation than instruction, though I know each writer who comes over the duration of the project will be asked to visit the same locations: creek, log decomp, and clear-cut sites. I'm expecting science to be the boss here. After all, my host has been studying this terrain for decades. It takes me a few interchanges before I realize that he really means to make me a partner in the enterprise of understanding this place.

We park at the Blue River Face timber sale unit, an area partially cut one year, then burned the next, and planted with seedlings the following year. The cutting prescription was set on a 180-year rotation with 30 percent live tree retention. Fewer cuts were made close to the river to decrease erosion and silting. Snags were left standing as habitat for voles and flying squirrels.

Fred strides down into the cut, peering at stumps, scanning the tree rings for signs of an earlier wildfire in these firs that had lived five hundred years. I wander along the charred ground, trying to hold onto his language for the place. I write "patch cutting," "too much edge," "min frag," "owl injunction," "new forestry." Fred has an excited mind and verbal acuity that are hard to keep up with, especially when his commentary is filled with a lifetime of learning about this forest. What really interests him are volcanoes. He calls himself a "closet volcanologist." He's visited eruptions in Hawaii, the Galápagos Islands, and Mount St. Helens to see how such a scale of disturbance registers in the forest. He says that "the organism perceives the mechanism of disturbance and makes a genetic interpretation of the mechanism."

Ten days after Mount St. Helens blew off her top, leveling everything within an eight-mile radius, the entire terrain white with ash from the fire and pyroclastic flows, he watched colleagues digging holes to study the deposits. He happened to gaze down into one. He saw spidery, translucent threads of mycorrhizal fungi fluttering in the wind, threads so fine he couldn't have seen them if they had not been dusted with fine volcanic ash. Ten days after the cataclysm, the forest had raced back to work. It was as if fire had said to the Earth, "Go forth and multiply."

Fred rejoins me at the roadside where I've been standing to study the landscape, a gentle slope leading toward the seam below where water must be flowing and tiers of brocaded hillsides rising beyond.

"What do you see?" he asks. There's a beat or two of silence in which I realize that my lack of experience and specialized language are part of his hypothesis in this collaborative experiment.

"It looks messy. There's brush left on the ground, tree-sized logs, snags. It looks natural," I answer. "This landscape reminds me of our family's summer home in Canada where we haven't cut anything for fifty years. Unless it threatened to fall on our house. The woods there is such a mess of overgrowth and downfall, you can hardly make your way through it anymore. I've come to think of nature unhindered as messy."

I try to describe what I notice at the cut site. Brush, snag, stump, char, feathery seedlings, bear grass, salal, tiny red-stalked clusters of something that grows dense as streptococcus on an agar plate.

"Yes," he says, "the whole landscape is organizing itself."

A flash of words pops into my mind, giving shape to something I've felt for years.

"This cut keeps intact the wisdom of Earth. Nature, to me, means deep time—what the Earth has learned through long trial and error."

"Of course, I'm speaking poetically," I add apologetically, imagining how useless such words would be in a grant application to the National Science Foundation. Yet as a poet working in the house of science, I feel responsible to bear forward some remnant of the romantic tradition, the sense that out of the particular the transcendent may arise and that language can embody such experience. The poet of our time has a more complicated task. She lives with a divided mind, remaining as skeptical as a scientist about the tools of her trade. Hasn't language been used to manipulate, oppress, deceive, and betray our ideals more consistently than it has ever served as a vessel for poetic or spiritual feeling? How can poetic language be called to the world's aid during these days of threat and peril? Can poetry carry our love as a mine canary into the world? This last question must be my hypothesis in this collaborative experiment.

Fred nods and explains the site this way.

"In the current ecological approach to forestry you try to keep more of the complexity of nature in the disturbance you create. A little bit of chaos is a good thing."

We talk about the failures of language in both purviews, how so little of what we've said and done has protected what we love. When the Northwest Forest Plan was written, its architects looked for words to describe the forests they hoped to save from the blade so that the land could fulfill its fullest evolutionary possibility.

Ancient forest. Virgin forest. Old growth. Everyone agreed that if those words were the best they could do to inspire conservation, the last stands of North America's forest legacy were doomed.

"Is this a good landscape or a bad landscape?" Fred asks as we gaze over the green tapestry. I'm speechless. I want to think that beauty makes a landscape good, but that trivializes the complexity that makes life work. This mess too is good for the precious attention it brings out in us.

I thread my gaze through the scrub, slash, and snags. So much of the process of regeneration on disturbed land occurs beyond the apprehension of the senses. There is a wholeness to a forest that the damaged forest cannot help but seek. Such a process is a fruitful laboratory for the daydreams of scientist and poet alike, as we reach for the words to describe what lies just past our comprehension. What is going on out there might be described by a graph, an equation, a poem sequence, or a conversation. All would fall short of explaining the complexity of relationships that comprise a forest. That gap between the desire to know the world intimately and our capacity to do so is one the attentive mind is always drawn to fill. Paying attention here means more than engaging in focused study. It means "attending to," as one would do in the care of one's home, livestock, or beloved.

The next morning Steve Akers and I clamber over vine maple and Oregon grape, a tangled mess of scrub that covers Hardy Ridge high over Cougar Reservoir. This terrain is better suited to flying squirrels and red-backed voles than to a mildly arthritic, bipedal primate. But here I am on a sun-drenched morning in May, hiking with the head of the northern spotted owl research team and filled with unaccountable joy. Last night, Steve had been bushwhacking toward an owl that was calling from a mile away. He set a compass point and hiked into the dark forest toward the call but never found the bird. He's been working on the owl study for seven years, on wildlife fieldwork for twenty-one. Today

we're looking for a spotted owl that has been in the study for twelve years, one habituated to the visits of field scientists.

Extensive study of this species had been conducted for at least a decade prior to its 1990 designation as threatened under the Endangered Species Act. The northern spotted owl is one of the most studied birds in the world, inspiring unprecedented collaboration among scientists, governmental agencies, universities, and private landowners.

We break into the opening shade by a small stand of fir-trees not as super old, as we've seen along the McKenzie River Trail, where there are giants over six hundred years old, but stately elders nonetheless. The ground is dappled with light, the air cool and damp. The hillside drops steeply away below us. Ahead of me Steve hoots the four-note location call: *Hoo-hoo-hoo-hoo*. The last syllable descends with a slight warble. No response. Then he turns, and a quiet smile opens on his face. He has the bright and easy look of a man who knows how lucky he is to love his work. He points over my left shoulder.

Silent, she's perched on a small understory branch twenty feet up. She's watching us, waiting for us to notice her. She knows the contract. She will give us data: we will give her mice. After three decades of research on the spotted owl, scientists have gained a wealth of understanding about this creature's life history. Each spring the field crew checks nesting pairs for their reproductive status and bands fledglings to include them in future surveys. The data gathered led in 1994 to the Northwest Forest Plan, a comprehensive guide to conservation that decreased the rate of logging and how the cutting is done, giving the owls and their entire ecosystem a better chance at survival.

But data cannot compare to the experience of that deep well of attention, quiet, and presence that is the owl. She has a spot-

ted breast, long barred tail, and tawny facial disks with brown semicircles fringing her face and back-to-back white parentheses framing her eyes. These markings give the impression that her eyes are the size of her head. The blackness of her pupils is so pure they look like portals into the universe.

When Steve takes the first mouse out of his aerated Tupperware container, lifting it by its tail and placing it on a log, the owl drops, silent as air, down through the branches and closes her talons. She lofts back up to the branch and scans around. She may be looking to see if a goshawk is near. Whatever constitutes a threat to her does not include us. How rare it is to have more than a fleeting glimpse of a creature in the wild. Still clutching the mouse, she burps up a pellet that plops to the ground, gives us a nonchalant look, then gulps down her meal.

"You want to see the parachute-drop?" Steve asks with a grin. The white mice have been raised in captivity, and their sense of space has been so constrained that when he unsnaps the lid, they stretch their heads up and look around but make no attempt to run away. The world to them is the size of the container in which they find themselves. He places the second mouse onto the log, and the owl billows out her wings, buoying herself down to us. It takes a moment to understand why her flight catches me each time by surprise. No ruffle, no flutter of resistance through the feathers. She's evolved for this easy drop onto her prey. The spotted owl is a sit-and-wait hunter, unlike the goshawk, which will tear through the woods in pursuit. The fringed edge of her wing reduces noise and increases drag, making this strategy a good match of form with function.

Steve collects the pellet, and we poke the slimy gray glob of indigestible fur and bones from the previous day's meal. The bones are very delicate, still shiny with the life that left them, some nearly two inches long.

"Maybe a wood rat," Steve says. Through binoculars he can see the owl's identification band. Last year a male was keeping this female company, a two-year-old from nearby King Creek. This year, so far, she appears to be alone. The owl team's last visit to this site was one month ago.

"How about the side grab?" He might be a dad boasting about the agility of his soccer-playing daughter. He isn't making the owl perform for our enjoyment. These flight skills are as natural to the owl as stepping over a crack in a sidewalk is for us. The next mouse is barely out of his hand, scurrying in confusion on the tree trunk that rises beside me, when the owl swoops down, talons leading, and picks it off right beside my shoulder. The catch happens so fast that she's flying away by the time I realize she's grabbed the prey, killing it instantly in her grip. She flies up to a snag broken off forty feet above the ground and tucks the mouse carefully into the jagged wood. This is a cache, not a nest. If she'd been delivering food to her young, the nest would be a natural platform high in a tree. She checks to be sure the mouse is well hidden. If she does have nestlings, she'll come back later for takeout.

The spotted owl research protocol demands that we spend an hour with the bird. She's had her limit of commercially raised albino mice, so now we sit to see what she does and if what she does will tell us whether she has a mate or nestlings. This suits my research protocol just fine. I like to watch. The owl doesn't make a sound. She perches on a branch maybe twenty feet above us. She is still. She watches us. She reaches her head forward—"the pre-pounce lean," Steve calls the gesture—as if she has seen some prey on the ground. The song of a thrush flutters through the quiet, the auditory equivalent of seeing an orchid in the forest. Beauty is what I came here for, a beauty enhanced, not diminished, by science. If I had only my senses to work with,

how much thinner would the experience be? What a record we might have of the world's hidden beauty if field scientists and poets routinely spent time in one another's company.

A young tree, broken and caught between two others, creaks to the rhythm of the wind. How well the owl must know this sound. Does she anticipate the crash of its falling? What is the consciousness of a spotted owl? There she perches perceiving us, and here we sit perceiving her. We exchange the long, slow interspecies stare—no fear, no threat, only the confusing mystery of the Other. Steve knows her language well enough to speak a few words: the locarion call, the bark of aggression. Perhaps that means she thinks we are owls. We do not look like owls. But we do, briefly, behave like owls, catching and offering prey, being still, and turning our eyes to the forest.

"What are you?"

"What are *you*?"

That's the conversation we have with our eyes.

"What will you do next?"

"What will *you* do next?"

I keep falling into the owl's eyes.

Then we stand up and hike down from that high place.

An idea common to science and poetry is that an experiment is an act the outcome of which is unknown. In science the goal is to add to a body of knowledge. In poetry the goal is to add to a body of reflection, to share the innerness of human life in ways that helps us to get the drift of how the world is working. Who can know what the outcome will be of such practices when poet and scientist attempt to engage in them side by side, not one in service to the other, but both in service to the promise of discovery and connection?

Witness

This Oregon
of gray
that rains
and their
in a tangle
on the hill
Rhododen
smack the
downpour
and the
On bare
it up with
In, com
among the
The drops
catching
single in
downward
no drip on