2016

Beautiful, Battered Lands: Making Peace with Place from the Rust Belt to Appalachia

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BEAUTIFUL, BATTERED LANDS:

MAKING PEACE WITH PLACE FROM THE RUST BELT TO APPALACHIA

By

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Bachelors of Arts in Environmental Studies, Allegheny College, Meadville, Pennsylvania, 2014

Thesis

Presented in partial fulfillment of the requirements

for the degree of

Masters of Science

in Environmental Studies, Environmental Writing

The University of Montana

Missoula, MT

May 2016

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This thesis is a collection of short non-fiction essays centered on the particular landscape of western Pennsylvania and West Virginia. The essays deals with the history of natural resource exploitation in the region and its associated economic effects, using that as a basis for reflecting on modern environmental issues. Operating in the tradition of nature writing, the collection incorporates research on history, ecology and economics, interwoven with personal narrative of the author's experience in the region and broader philosophical reflection.

Beautiful, Battered Lands:

Making Peace with Place from the Rust Belt to Appalachia

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Origin Story

The first thing I remember is green. Not just green as a color, but a green so palpable it was a presence, green so dense that it filled the world. The child's perspective renders everything grander, richer and deeper, distorting everyday sights until it seemed that I occupied a land of giants. In that past-tense vision trees tower on a steep slope beyond the edge of the lawn, twined with vines and supported by a thicket of tangled undergrowth, a solid mass of growth. What I saw had crossed the divide between individual trees and the collective forest, that indefinable tipping point where undeveloped spaces become more than the sum of their biotic and abiotic parts, not just places but separate entities, full of their own verdant vitality. The world was green and I was overawed, peacefully resigned to the notion that any ball rolled beyond the confines of the backyard would be swallowed without a trace by the wild wood.

Looking back, I realize that this has to be wrong. In a house on the outskirts of Pittsburgh, with a yard so narrow that we could have passed things to the neighbors from window to window, there would be no room for anything approaching the kind of deep woodlands I seem to remember. At best what I was seeing was some little patch of scrub, thin regrown trees draped with scraps of grapevine, a remnant of larger forests that had been systematically cleared and fragmented over centuries of determined human expansion. It would be optimistic to have called what I saw a grove. Yet, it felt *green.*

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By the time I was born, many people were already making the objective case that the natural world was in deep trouble. In 1992, the northeastern cod population had sunk so low that a fishing moratorium was being proposed, and the UN was meeting to confront the larger crisis of global biodiversity loss. Humanity's ability to shift the composition of the atmosphere had prompted the "end of nature" to be declared three years earlier, and the hearings on climate change were creating as much

discomfort in Washington DC as the suspiciously severe heatwaves. The ozone was shrinking, the Aral Sea was drying up, and a supertanker had dumped oil all over the Hebrides. Major environmental groups were losing active members to issue fatigue, the increasingly grim circumstances wearing down even committed advocates.

There may be something unique to a generation that grows up with the awareness of mankind's weather-warping power, hearing frantic calculations of population growth, peak oil and pollution rates as part of the background noise of daily life. The rate of environmental change in the modern era means that the world of my childhood is fundamentally different than the landscape my grandparents or even parents grew up in.

True, there are some places in which that change has brought about improvements. Western Pennsylvania breathes a lot easier today than under the dark skies of the great Donora smog, for instance, and the hawks flying over Rachel Carson's native Allegheny Valley fare better now than they did during the heyday of DDT. By and large however, more of the world bears the grubby fingerprints of human intervention today than ever before. From lands criss-crossed with freeways and pitted with excavations, to seas clogged with floating refuse and runoff-induced algal blooms, you'd be hard pressed to pick a location that hasn't been marred by human actions.

I know this and I struggle to accept it, particularly when it comes to integrating this idea of pervasive, damaging human impact with places that I remember fondly. It's jarring to wander through some nostalgic landscape in memory, tracing the swamps and the hills, the creeks and brambles, only to recall that one key turn was marked by the rusting heap of an ancient sedan, paint long gone but steel bones still rigid beneath a blanket of fallen leaves. Other favorite haunts contained the remains of old cabins, reduced to toppled walls, free-standing chimneys and the occasional twisted metal frame that might once have been a bed. I remember fondly poking around in old fire pits abandoned in the midst of

the woods, fishing through the ashes to pocket shiny twists of melted glass that had likely started their lives as mass-produced bottles. Psychologists now suggest that early experiences in the outdoors are key to the development of a lifelong relationship with nature, essentially setting the script for future environmental commitment. Given the circumstances, I don't know whether that's an encouraging prognosis for me or not.

If I can grow accustomed to seeing richness in damage, is that a dangerous thing? This kind of love could condition people to complacency over time, allowing us to become so utterly at home in the compromised world that we forget that past peaks of diversity and integrity ever existed. One day we might not worry about the gradual disappearance of the thousands of threatened species of amphibians or the decimation of bat populations, any more than we currently go around mourning the loss of mastodons or the departure of the dodo. When things are out of sight, they tend to go out of mind as well. Loving the world we have could make us vulnerable to the illusion cast by shifting baselines, too tempted to believe that the ecosystems we currently see are both the definition of normal and the fullness of what is possible.

Will it be harder to envision a better world if you've already fallen in love with a broken one? Is the mourning, the anger, even the pain that seems to come along with a clear-eyed view of our current environmental crisis necessary to keep the fire burning for activism and change?

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Even knowing the risk of complacency and the danger of limited imagination, I find that I just don't want to stop loving scrap forests. I don't want to mope through the woods, weeping over the corruption of the world by human interference and peopling the pathways with the ghosts of defunct subspecies. If these altered bits of the natural world are where we first walk and wonder, then I don't see what else can we do but love them. There, as much as anywhere else, we can learn to live in the

green that remains close at hand, to observe and appreciate the subtle wonders of the sanctuaries we are given. There is something egalitarian about the accessibility of little half-tamed oases, lands that don't require a serious investment of time and money to reach, that don't demand peak physical ability or deep wilderness knowledge. The abandoned lots and feral fields, meager as they might seem, are the freewheeling frontiers for legions of inexperienced explorers, both potential gateways to greater horizons and worthwhile ends in themselves.

I was lucky. The forest with the junk car came under threat from development while I knew it, split with surveyor's lines and tagged with pink ribbons, only to be passed over in favor of another site. It survived with minimal damage, and I had the pleasure of watching truck tracks grow up in blackberry brambles as the surveying stakes rotted away. That this spot was deemed unsuitable was largely thanks to the protected status of the bats that roosted in my favorite tree, a lucky savior that many similar remnant forests lack.

It can be difficult to defend these places, too hard to rally public opinion around landscapes that have already suffered some degree of upheaval and which may offer little in the way of show-stopping natural attractions to reward a visitors' devotion. Yet, perhaps one of the redeeming features of a generation that has grown up with limited access to the touchstone of truly wild nature is a resistance to classification, a wariness about the notion of implicitly ranking the spaces on our planet and the tendency to always place picturesque landscapes at the top of the heap. Maybe one result of life in an increasingly precarious and human-altered world is a definition of nature that is broad enough to embrace the great variety of places that remain, from the great bastions of wilderness and well-preserved parks to the little urban oases and backyard jungles.

If opportunity can indeed be found within ecological crisis, then perhaps we may yet reap the rewards of a wider, more inclusive view of our fragile natural world, straining our eyes to see the many vital shades of green wherever they are found.

Buckwheat

When my family first moved into the house near Ellwood City the view from the road was not so much a yard as a mess, hip-high with yellowed grass in thick overgrown tangles. Years of untended growth hid the slope of the hill and the trickling seep-stream, the occasional young sapling and crawling briar matted into the overall mass. Dreaming of gardens, we started clearing this savannah by hand with a scythe and rakes, sweeping the cut stems into thick mounded lines and then rolling them down the hill to the edge of the woods.

In retrospect, it seems like there was an urgent quality to the first projects in the new house, renovations underway before the moving boxes were unpacked and paint swatches taped up in rooms still jumbled with unsorted furniture, making a mark just to prove that we were really there. Helpful hints offered by neighbors and new acquaintances rapidly took on a paranoia-inducing quality, exchange after exchange demonstrating that everyone else knew more about the house and property than we did.

There is only so fast things can be changed though, especially where the natural world is concerned. While the better-tended section on the other side of the house moved steadily ahead towards cultivation, the failed grassland lagged behind, cleared and turned stride by stride at a walking pace, buried stones picked one by one out of the ripples of loose earth. With little confidence in the quality of the soil after all the years of neglect, attempting to make the leap straight to traditional garden crops seemed rash. The first phase was to be the cover crop- buckwheat.

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McConnell's Mill doesn't run anymore, save for the occasional grain-grinding demonstration for the local tourists on a summer weekend. The system feels precarious by now, huge wheels and pulleys rattling the whole structure, from the creek-damp stone of the lower level where the millstone shelters

to the thick plank floors above, cut through with belts like a game of snakes and ladders. Even though it doesn't look much like any modern notion of industrial production, the whole idiosyncratic system still works, taking the sack of grain the tour guide pours in at the top and spitting out soft ground flour at the end. Long past its heyday as the cutting edge technology of the nineteenth century, the mill may now be most popular as a subject for photos, its brown bulk hunching behind the cheerful red span of the nearby covered bridge on Slippery Rock Creek.

It might not have been preserved at all, were it not for the loyalty of the mill's last caretaker, who refused to abandon the place that had been both his work and his adopted home for most of his adult life. Mr. Wharton had followed an unusual trajectory, growing up the son of a slave in the reconstruction south and starting his life over again as a young man at a little mill in a backwater of Pennsylvania, a place where his seventy-year tenure would gradually take him from an outsider to a kind of institution, still spoken of with fondness by those who can remember. For the long lean years between the mills' shutdown in 1928 and its purchase by conservation groups in 1946, he gave tours and charged visitors for parking, cementing both the mill's status as a local landmark and his own place as the keeper of its history. There is even a sort of ghost story that the caretaker's spirit inspects the mill by night, although I can't imagine anyone being frightened by such a respectable haunting.

An exhibit on the first floor of the mill features samples of the different types of grains once ground there- corn, wheat, millet and so on, lined up in sealed glass jars for visitors to examine. The buckwheat kernels stand out from the rest, little pyramid shapes with distinct points, looking too heavily armored to be edible. In fact, they are different from the other specimens in ways that are more difficult to spot. Not a part of the grain family at all, buckwheat is classified as a fruit seed, related more closely to rhubarb or sorrel than any of its companions in the mill display.

With a short growing period and a hardy tolerance for cold, buckwheat was easy for local farmers to fit into their existing crop rotation, filling a difficult niche in the marginal weeks of the growing season. Able to fix nitrogen and eke out a living on soils that are acidic or low-fertility, the pseudo-grain also offered benefits independent of any grain harvest that resulted, improving the ground in preparation for the next planting. Although it never reached the status of a staple crop, in the early twentieth century there were over a million acres of buckwheat in cultivation, concentrated east of the Mississippi. In the modern era it's more of a novelty, a heritage ingredient used only in a few specialty recipes.

In an area once nicknamed "Buckwheat County" for the popularity of the grain and the profusion of small mills, there is now only one independent mill left that still specifically grinds and sells buckwheat flour, tucked away on a rural road and using an old farmhouse as a storefront so that customers pick their way to the door through the barn cats draped across the front porch. The mill's sturdy cloth flour bag with its antlered buck logo seems a different kind of artifact than the paper sacks of flour from the store, difficult to discard even once the contents are used up.

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We start our search for buckwheat seeds at the feed store in town, a little building tucked away down by the railroad tracks, not far from the parking lot where the farmer's market is held on summer Saturdays. The two old men lounging behind the counter seemed puzzled at the request, initially convinced that we must want the seed to bait deer. This is how far from prominence the crop has fallen, and although we do eventually track down a sufficient supply, that is months later and several towns away, a process that pushes past the date for planting. Moreover it is a moment of feeling silly and out of step, non-hunters in a place where the start of deer season is celebrated like a holiday, asking for seeds that no one seems to remember. This is a community where people tend to stay put, where I

could easily remain the “new kid” even after years of residency, destined to be compared with peers whose families have been here for so many generations that their names adorn street signs and hang on storefronts, personal history woven seamlessly into the general geography.

Some days even my speech conspires to paint me as an outsider. Despite having spent my early life in this region, intervening years in New York have left me with none of the squashed vowels and extra ‘r’s that slip naturally into speech in western Pennsylvania, a subtle local accent that borrows from both northeastern and Appalachian dialects without quite matching either. I’m not sure I’ll ever manage to use the collective “you’ns” without sounding ridiculous, or pronounce everyone’s favorite football team as the “stillers” like the neighbors. Up against that built-in disadvantage, it’s natural to look for any shortcut towards nativeness that might be gained through a quick study of history, ecology and culture. Buckwheat spans all three categories, and the notion of growing an ingredient that is both familiar from pancake breakfasts and embedded in the local story is enticing. Or it would be, if it didn’t appear to be a crop on the downslope.

In geography class we have a “celebration day” where everyone is supposed to bring in foods that are significant to our heritage or place. A truly distinctive food culture would be a hard one for me to conjure, since the immigrants in the family tree were enthusiastic assimilators, often changing everything from language to religious denomination in a single generation to more quickly claim their place as genuine Americans. Place should be easier, but when I run my idea past the teacher, he doesn’t even recognize buckwheat.

Maybe I’m just a little too far north, on the wrong side of the border from family footholds in West Virginia, a place that hosts buckwheat festivals and publishes articles devoted to it in the state cultural magazine. Maybe it’s just too late in time, when most people are more likely to be taking home loaves of pre-sliced wheat bread from the local grocery mini-chain than getting bags of flour from a mill.

I start to argue, and to settle the matter the teacher takes a quick poll of the room. “Raise your hand if you’ve eaten buckwheat.” After a long awkward pause, a single hand goes up.

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Buckwheat cakes take on a personality of their own. Traditionally they are made with yeast that is left to sour overnight, and as often as not the morning finds that the fermentation process has gone rogue, either dismally flat or entirely overboard, bubbling against the lip of the bowl as if the batter is trying to escape. The handed-down recipe from my grandmother doesn’t clarify much, more based on intuition than any reliable formula, temperature gauged by poking a fingertip into the mix. Hers seem to have turned out right every time that I can remember, while more than one of the batches attempted by the younger generations have ended up dribbling their way into a garbage can or subject to desperate salvage attempts with pre-made mix. Assuming that the initial phase can be somewhat controlled, buckwheat cakes are sweetened with molasses, dark grains and dark syrup combining to turn the finished product a color closer to deep grey than an appetizing golden brown. The taste too is somehow dark, earthier than bread, nutty and a little sour from the residual effects of the yeast.

Part of the problem of the plant’s flagging popularity may simply be the challenge of working with older, more temperamental varieties, a disadvantage reinforced by a flavor that is complex and slightly odd rather than generically “good”. What buckwheat lacks in convenience it makes up in other ways, though, its role within a web of locations and anecdotes as complex as any set of ecological relationships. The craze for rediscovering unique crop varieties and so-called “ancient grains” could eventually bring buckwheat one more day in the sun, but reimagined as part of a dietary fad it wouldn’t carry the same depth of character, the difficult-to-define legacies of a plant with its roots sunk into a specific medium of history and geography.

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As it turns out, the sought-after buckwheat seed doesn't make it in the ground that season. The weather turns cold early, speeding through fall's riot of color only to settle into a long western Pennsylvania winter of low, heavy clouds and lazily drifting snow. The buckwheat waits out the cold days in a sealed bucket down in the basement, one piece of history at home in another.

Uneven stacks of mortared stone prone to dampness and mysterious dripping, the walls of the basement are just one of the places where the age of the house shows through. I habitually trip on short uneven steps, rattle doors that don't latch and worry at plaster peeling off the unused chimney shaft, reminders of a pre-building code era when homes were personalized creations. Another family's initials are carved on the bricks outside and discarded junk from long-gone owners sometimes gives a new planting site in the garden the character of a minor archaeological dig. Half-hidden in the woods further up the hill, a little cluster of headstones lies left behind from the days of home burials. There are times when simply spending a day at home feels like putting on a piece of clothing that has been worn into the shape of someone else's body, unconsciously counting all the ways that this place has been imprinted with the lives of people who have since moved on or passed away.

Slowly but surely, things can get easier. In the summer I hunt through the black-cap raspberry patches that border the yard, balancing on tip-toe to reach into the brambles, pulling my arms back scratched and stained with juice. Crisp early fall, and I salvage some of the black walnuts from the voracious squirrels, smashing them on a flat rock from an old fallen foundation to reveal the oily flesh. The buckwheat seed gets planted only a little bit at a time, a patch here and there alongside the row crops or skirting the edges of a step-wise terrace. The wild field that was cleared so painstakingly has yet to make it to cultivation, and is devolving into a feral state with alarming rapidity, not just the tall grasses returning but the thicker tough-stemmed weeds and fresh starts of saplings.

In a certain light that whole stretch of resurgent plant life could be seen as a bit of a failure, a conspiracy of poor planning and other factors outside our control. I don't see it that way. Getting accustomed to the smell of turned earth and the slow warming of buried things brought to the surface serves a purpose independent of any harvest that results. So does finding the links between the remaining seed sellers and the stories of the region's dwindling mills, the long chain of history that links a recipe handed down through my family to a town where we may always be newcomers. In a sense, buckwheat upheld the promise latent in its biological characteristics, that valuable ability to fit into a difficult niche, enriching the ground so that other things can grow.

On Walking

If you ask me about walking, I will lie to you. I won't mean to deceive, it just happens automatically. Maybe I'll lead with a story of the cataclysmic thunderstorm that ended a day's hiking in the Catskills, path down the mountainside lit up by lightning, or recount a search for tumbling waterfalls tucked away in coves of the Appalachian Mountains. I'll praise the quiet shade of evergreen groves in the Allegheny Plateau, or the rolling ridges of the Laurel Highlands skirting the brink of deep river-gorges. I will cherry-pick my own memories, looking for the tale that I imagine you want, one where the world is wide and wild, the protagonist always plucky.

Let me try again, honestly this time. Mostly I walk along roads, on berms, sidewalks and lawns, in the margins of farm fields and slipping on the edge of drainage ditches. I dodge traffic and skirt property lines marked by barbed wire fences, stub my toes on broken concrete and hold my breath as I fast-step past the gory remnants of deer season. I walk because the dog needs exercise, because there are errands to be done, because driving makes me anxious. I walk in ordinary, practical places for ordinary, practical reasons the vast majority of the time. Those other things that I hold up as my marvelous adventure stories, no matter how highly I prize them, are isolated anomalies, experiences a little separate from everyday life. If I were to judge by the ground I tread the most, my home turf isn't turf at all. It's asphalt.

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Many odes have been written to walking. Thoreau devoted a whole essay to the proper practice of it, considering the piece one of his most important works. Muir sings the praises of locomotion as self-reflection, amongst other things, and Ed Abbey frames pedestrianism as restoring some of the dignity we sacrifice to a seated life. Far more than just a way of getting places, walking has been historically pitched as a contemplative exercise, a mind-opening meditation and a spur to creative

thought processes. In the modern era it has been become even more of a political act, a pointed rejection of air awash with motor exhaust, a valiant stand against the petroleum-fueled notion that going faster is always better. Given the weight of all the conceptual baggage laid on the simple act of putting one foot in front of the other, it's amazing anyone is able to keep on striding.

Comparatively less emphasis seems to fall on the physical spaces where we walk on a daily basis. Of course, there are general admonitions to live in the moment and fully experience your surroundings, striving for a sort of quasi-zen concentration that will imbue each action with peaceful significance. Yet I always have the nagging feeling that the advice is supposed to help me listen to the wild windstorm in the forest somewhere up against the edge of the map, or ensure that I carefully note the first day the geese land on some localized equivalent of an idyllic Walden Pond. I try to fit myself into these tableau, and it just doesn't quite work. "Here I am," I think, "jaywalking across a busy street with an armload of groceries, carrying on the noble tradition of the transformative power of ambulation." As internal narration goes, it lacks a certain something.

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Thanks largely to where I walk, the flowers I know best are weeds. Some of them wear their nature openly, status clear from their humble names. There are the seed-spitting orange bells of jewelweed, or purple ironweed grown head-high on its thick, tough stalk. Others try to feign respectability, hiding behind polite appellations and making a show of fine foliage to compensate for their other faults. Daisy fleabane has its delicate fringe of white petals, perhaps growing by plump yellow birdsfoot trefoil, or the small pinkish spur of lady's thumb. Yet, pretty as they are, these are the sort of plants that get chucked out of gardens, that spring up spontaneously on eroded banks and grow happily in between bits of roadside litter.

I know these scrap-plants, where my knowledge of more unique and worthy species fails, because they are my constant companions, never more than a side-step away. I take pride in useless trivia about them, pointing up the bank at a particular green stalk or spray of blossoms as if disclosing something of great import about these vegetative interlopers. You can eat the root of Queen Anne's lace like a wild carrot, as well as the bright blue flowers of chicory, but would be advised against the little green may-apples unless your stomach is exceptionally strong. Joe-pye weed differs from milkweed in its serrated leaves and later bloom-time, but both are frequented by monarch butterflies. The secret of rough bedstraw's persistent stickiness lies in tiny downward-pointing hairs that grow not just on its leaves but also along each branching stem.

This is the natural history of the ubiquitous and uninteresting, the colonizers of disturbed lands and abandoned areas. Although some are native and others foreign, most are opportunists in the plant kingdom, adapted to exploit every narrow advantage and thrive on barely passable conditions. It's true that in some places the weeds may get out of control, a single ambitious species managing to upset the natural equilibrium. Whole banks stand awash in garlic mustard, an escaped seasoning capable of waging chemical warfare to secure its position until it is torn out in pungent handfuls. Tangles of multiflora rose sprawl down a slope, so spiny that they can be faced only armed with heavy gloves and shears. Ultimately though, this is a problem of vulnerability and fragmentation, gaps in the defenses of biomes that were once stable enough to take care of themselves. Not much is gained by cultivating an enmity for the lucky weeds that have hit on a winning combination of adaptations, and less by writing off the spaces they colonize as a wasteland to look away from.

Even though no one wants a world of weeds, there's something reassuring about their presence, the reminder they provide of tenacious life thriving in the most unremarkable places. Even at their most irritating, the vigor and toughness it takes to for a plant to truly succeed in a difficult neighborhood provokes a grudging admiration. Walking along another otherwise undistinguished stretch of road, I feel

that I owe the weeds my attention, down to the level of admittedly pointless trivia. If these problematic plants are what provide the splash of color in the day, their insistent, unruly vitality interrupting a flat ribbon of blacktop or the uniform green of a chemically tended lawn, then some sort of gratitude is warranted.

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Let's posit for a moment that what the great thinkers say about walking is true, that every trip downtown and afternoon stroll can be an act of contemplation and meditation, a triumph for the slow and careful in a world that speeds haphazardly along the brink. That would mean that the sidewalks are temples, that the medians are political forums, that the landmarks we pass every day are fraught with significance. If we value the action we might need to value the venue just as much, to give a glow of importance to the stately street trees and the chattering squirrels, the crows roosting on the telephone wire and the weeds growing underfoot. Every day would contain small revelations, the endless wonder of coming face to face with other forms of life, miracles and monsters hiding in plain sight. The grandeur of the world would be distilled into tiny ordinary encounters, impossible gifts freely to be found on every street and byway. How would we walk in a world so heavy with meaning and ripe with opportunity? How would we live?

Parks and Wells

My first introduction to fracking is a sound. I've known about the drilling before of course, but only at a distance, through stories in the newspaper or second-hand rumors around town. This time I am hiking in the park near Walnut Flats, listening to the rolling sound of a nearby creek's rapids and the sliding crunch of my footsteps on old leaves. The new sound is rhythmic, but not the wandering off-kilter cadence of natural motion. Instead it is a fast, steady chug, precise in the way only mechanical things ever achieve.

There is a compressor station up on the ridge, and although I am low in the valley it shouts its presence down the slope, tugs at my ear until I forget the quiet wood-sounds and fill up with the drone of pumping pistons. The special turbines, motors and engines that make up a compressor station provide the impetus needed to keep sluggish natural gas flowing from some disparate point of harvest to the refineries and other end users down the line, a relay of machinery located every forty to seventy miles along a pipeline. The implication here is simple and stark - a compressor station within earshot means a pipeline close by, and a pipeline is most likely to run through this relatively out of the way spot if there is a well in need of service.

I found the well later, a neat square of gravel with the tower in its center and a straight row of tanker trucks parked alongside, looking too bulky for the narrow back road. I thought that the sight would carry a visceral shock, but the reaction didn't come. The potential problems with drilling are not obvious at a glance, taking place in the deep subsurface world of compressed shale seams or else somewhere offsite, where wastewater awaits a solution to the puzzle of reliable long-term disposal. The aboveground infrastructure only gave me a sense of confirmation, like putting a face to a name you've heard many times already, and the appearance of control that pervades surface operations can actually be lulling. Yet, on the same road is a campground, houses, and a farm that offers hay wagon rides and

corn mazes in the autumn. Between that and the park itself this stretch of land is a minor tourist attraction, drawing the same small crowd of locals year after year. The addition of the industrial bustle of natural gas development and transportation seems a difficult fit with the countrified peace that is one of the area's main amenities.

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Despite the fact that it belongs to the state and thus to *the people* in aggregate, I sometimes think of this place as my park. Almost every morning through the past summer, the dog and I walked the same route through the nearest end of the gorge, arriving while the air was still cool, shadows pooled in the little coves like stubborn remnants of the night before. When the afternoon thunderstorms hit, whipping the trees and crackling with lightning, I adapted by carrying a pair of loppers the next morning, cutting my way through tangles of downed tree limbs rather than be impeded from the daily routine. Even on days in the winter when the parking lot was almost empty and the cycle of melt and freeze had turned the surface of the path into unreliable ice, spikes strapped on over my sneakers could get me through.

I missed the acorns cracking down from the ridgetop in the autumn this year, and the delicate understory flowers unfurling in the early spring, but I have enough memories of past years to get me by while I'm away at school. At least knowing that the same patterns are happening whether I'm there to witness them or not, deer nosing for May-apples and finger-thin young fish sheltering in the creek mouth, provides a kind of reassurance. The notion that a well could someday slip over the border, bringing with it the potential for new access roads or smelly waste impoundments, clattering machinery or pipelines cutting through the tree cover, seems unfathomable. It's not.

In fact, it wouldn't even be the strangest siting proposal that has been laid on the table. Before the current governor reinstated the moratorium on drilling in state parks and forests, more than 1000

well applications were approved for Pennsylvania state forest lands and 230 well pads were actually installed. Pennsylvania parks have been at risk as well, with large sections of privately owned mineral rights underlying the state-owned surface in many places. Goddard State Park, in the southwest corner of the commonwealth, had been slated for five natural gas wells with the possibility of more to follow, and Oil Creek State Park's proposed gas wells have been tangled up in lawsuits over surface conditions.

Nor are parks and forests the only unlikely areas whose mineral rights have gone up for grabs. A 2013 report by Penn Environment found that there were 26 well permits issued in the state for sites located within a mere half mile of a school. The fierce competition for leases when the initial boom hit led each company to scoop up mineral rights as fast as it could with little regard to location, leaving the difficult work of sorting out whether or not the site was actually suitable for some later date. Although the number of permits can significantly outpace the number of wells, the rate of drilling in those early years provides a glimpse into the speed of the buying spree in Pennsylvania: from a scant handful of wells in the early 2000s, 2008 saw over 200 wells drilled, a figure which grew to nearly 800 in 2009, then 1440 in 2010. At one point the total number of active gas wells hit close to 8000, averaging a bit over one well for every 6 square miles of land in the state, although not all of those utilized the full range of modern technologies like hydraulic fracturing and horizontal drilling.

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When it's truly done responsibly, siting is much harder than just picking any spot that happens to be above a natural gas-bearing shale. The geology is a primary consideration of course, assessed with seismic mapping to ensure a viable reserve and avoid the presence of disruptive faults. A good site also needs to be a safe distance from any "orphan wells" abandoned and left unmaintained after earlier eras' booms, which can become an unwanted escape route for methane and other substances. Although in theory it should be easy to avoid these relics, in a state with over 8000 of them dating back to such early

eras that the records are unreliable when they're not altogether lost, orphan infrastructure can be a surprising nuisance.

A flat site beats a slope for ease of operation and erosion control, and the quality of the roads available for access matters, since having to build or repair a route costs time and money. The distance to vulnerable bodies of water is a common limiting factor, and rising contamination concerns have made the proximity of private water wells another serious consideration. Older water wells in particular, common for houses in this area, are sensitive to vibration and disturbance in the underground world. Added to that list of factors are the adjacent structures, the restrictions imposed by local zoning regulations, and the overall compatibility of land usage patterns in the area. Taken together they make for a complex logistical puzzle, but a measureable, factual one. Data can be gathered, features mapped and modeled, regulations analyzed. The human element is almost always harder.

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A common response to worries over siting is the "not in anyone's backyard" thesis. Decisions about placement that have become too difficult are simplified down to the notion that any project sufficiently worrisome to raise strong objections should simply not be undertaken. It's an elegant solution, and in the long term taking risky land uses off the table is a useful strategy. After all, reducing the number of projects with the potential to damage human or environmental health ought to be an easy sell, especially in an era of mobile pollution and global effects, when it's likely that no one will be immune from the aggregate consequences. The "just say no" philosophy is an uneasy fit with the continued high demand for heat and power, however, and interest in the Marcellus Shale has been on the rise in recent years.

The concerns around modern methods of gas development are becoming an increasingly common topic of discussion, with the local headlines trumpeting accusations of improper wastewater

storage and processing, the controversial possibility of groundwater contamination, and the ominous effects of any methane that escapes to the atmosphere. Even the more modest concerns like habitat fragmentation and noise pollution are beginning to grab some collective attention.

Yet it's equally true that the clean energy revolution hasn't arrived fast enough to push fossil fuels to the sideline so far, and small liquefied natural gas plants have proved an uncomfortable ally in getting substandard old coal plants taken off-line. Natural gas burns cleaner than the other non-renewables in terms of key pollutants like mercury and particulate pollution, and could *in theory* be a lesser greenhouse threat, although that depends on how comprehensively leaks can be prevented. Despite growing grassroots skepticism, the high hopes for domestic energy security and economic revival attached to shale formations are hard for many people to pass up. Perhaps more to the point, the big investments in transportation and processing infrastructure underway, including a predicted 30,000 miles of new pipeline to be installed in Pennsylvania over the next decade, are a strong indication that the difficult decisions around natural gas development aren't going away any time soon.

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After that first not-in-my-backyard twinge, I found myself second-guessing my preservationist instinct for the park. After all, what is the sound of a stream weighed against wells going in near schools, homes and communities? Just outside of the nearby town of Zelienople the whole neighborhood of the Woodlands has found their water compromised, the deterioration coinciding with the arrival of wells on adjacent property. While the water tests didn't find any conclusively drilling-related substances (and therefore placed the company under no obligation to provide a replacement water supply), the water running from the tap is brownish and full of mysterious grit, "flocculant" in the unappetizing technical parlance. I barely heard about, much less protested, the wells arriving on their rented land. The news slipped past me in the same way that the well proposal for the Mars school district escaped my

attention, and the escalation of drilling in the keystone state's only national forest. When the pace of change is this rapid, it often feels like I only hear about the projects when they have already gone forward or even gone wrong, long after the time for any meaningful attempt at prevention. Against that kind of backdrop, why should I put concern towards a piece of land that is not home ground to anyone, not the source of a livelihood or the site of constant human exposure?

After all, the park I have come to feel so at home in is not even easily defensible on the quality of its existing preservation. It has survived one coal mine already, a trickling side stream still running rust-orange from long ago damage. A gravel quarry riddles the ridge just above its far end, blast warning signs abutting the road that lead down into the gorge. The fact that this place continues to produce trillium and teaberries, wild turkeys and long blacksnakes is a mere narrow victory for persistence in the face of challenges. Keeping the wells away could just be another reprieve, a cheering but temporary refusal to push the hemlock hollows over some environmental brink. Uncomfortable as it is, the kind of importance I assign to a place like this may be a purely private love, out of proportion with its value to the larger patchwork of ecosystems or the parallel network of society at large.

Still, there is little chance of being truly objective. The choice to fight for one place over another takes place through a tangle of memory, aesthetics and emotion, knowing that effort put forth in one place may mean lagging support elsewhere, allowing some other person's particular sanctuary to undergo a radical transformation. Finding the best way to dole out our limited reserves of energy and heartache may now be a functional part of how a citizen interacts with the environment, but it is disconcertingly messy, a painful set of judgments that are as much an exercise in self-reflection and soul-searching as research and rational thinking.

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Then again, the narrative of choosing which place to fight for is in itself a flawed model. After all, these difficult decisions result from a topsy-turvy system in which the onus falls on citizens to stop every ill-advised idea one by one through arduous outcry and intense personal investment. This default system of scattershot letters, petitions and protests, while a heartening sign of citizen engagement, is also potentially a recipe for failure. In terms of tangible resources, it leaves organizations spread thin, rushing from crisis to crisis and never arriving at full enough strength to be anything other than the underdog. Perhaps just as importantly, it lends itself to human costs, to burnout and cynicism that wears away at a movement which is only as strong as its participants are resilient. The answer may not ultimately lie with getting better at fighting a losing ground game, running to keep pace with a process that has until recently possessed all the momentum of a runaway train.

In a better world, where those in power saw the big picture and regulatory structures were made with future generations in mind, maybe the weight of obligations would be turned the other way, asking the drilling companies to fight and justify each particular site and permit one at a time. Why do we need to drill here? What makes this ground well-suited? We could ask for calculations weighing all the gains of a local fuel against the goods already provided by an intact tract of land, the risks of development against the economic opportunity costs of leaving be. Let them justify each particular shift in the balance between gained impact fees and lost tourist dollars, the ripple effects of revenue and the diminishing amenity of peace. Past the regulations and the technicalities, slope and setback and geologic considerations, let's hear the compelling reasoning for substituting a growing machine rattle for quiet stream sounds.

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What is a place really worth? I can't tell you. Home again in the fierce January chill and midwinter stillness, even the water is subdued underneath a thin sheen of ice. The well itself is shut

down, the trucks gone and the equipment packed away. Tucked low in the gorge and far enough from the site of the compressors, I can no longer hear whether or not they are still keeping their steady rhythm. Everything else is unusually loud, drips off icicles and creaking branches lent weight by the surrounding quiet, the gingerly slide of footsteps across hard-crusted snow almost echoing. The cold clarifies everything, lending a sharp edge not just to the undercut banks and bare trees but the quality of the light and the sparseness of sound, as if every detail has been etched in the air. At peace again, for a little while.

Gardening

First there are the seeds. You can get just any old seeds of course, but purists insist upon the heirloom varieties. These are crops with a deep history, plants with a pedigree and a past better-documented than those of the people planting them. In the catalogs there are photographs of vegetables of every possible color, size and shape, shown in glowing lighting with gushing descriptions italicized underneath. Purple cauliflowers share space with striped beets, rainbow carrots and squash that resemble avant-garde sculpture, page after page of competitors shouting out their claims to the title of most terrific tuber or best brassica. In fact, the vegetable fandom is borderline uncomfortable at some points, an overreliance on terms like “luscious, juicy and ripe” causing the captions to read suspiciously like plant pornography. Printed assurances of good business practices aside, it looks like the journey into wholesome and traditional gardening is going to begin with a dose of glossy niche marketing.

Growing plants seems like such a simple thing. It’s an activity at the root not just of human society, but our very survival, the elemental base on which the ever-increasing complexities of our lives are built. There is no real substitute for it, no elaboration or innovation that can compare to the extraordinary reality of natural growth, dynamic life arising from the simple synergy of soil, water, sun and seeds. Growing a garden is supposed to be a touchstone for the natural and essential in a world increasingly concerned with all things synthetic and high tech, a way of forcing at least some part of our daily lives back into harmony with the natural cycles and local conditions. At least that’s the theory. In reality, it gets complicated in a hurry.

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The seed varieties are only just the start of the difficult decisions. Like most places, the particular little patch of western Pennsylvania where my family lives has not been blessed with

remarkable soil, so we need fertilizer. The stuff in the giant bag at the hardware store simply will not do it, no generic industrial blend of post-petroleum chemistry is worthy of our garden. Nor did the backyard compost heap alone do the trick, although it might have, if we had been willing to make a range of different heaps, adjusting each one differently. As it turns out, each plant is a little prima donna. A given species has very specific needs, in everything from soil temperature and sun exposure to pH, mineral content and even the texture of the ground. Factors as far removed as what was planted in that plot in previous seasons can affect the nutrients available, not to mention the impact on whatever bugs and blights may besiege the delicate little shoots when they finally poke their heads above ground.

So instead, we supplement the soil with little bags of special additives in ratios tuned to each plant's particular needs, not just at the time of planting but again at certain critical developmental stages when the plant matures or the fruits first form. I go from plant to plant with different bags of grit, consulting a chart to make sure I'm matching the right chemical formula with the right plant families. This one wants more greensand, that one more phosphorous, another will have to do without bone-meal it craves, which was left off the shopping list. Organic gardeners scorn the "inputs" that boost yields for agribusiness as a short-sighted means of gaming the ecological system, but this gentler attempt still bears a certain family resemblance. Deploying naturally-derived supplements one plant at a time certainly requires more precision than the indiscriminate nitrogen-flinging of a factory farm, but thus far we haven't exactly "closed the loop" either.

On top of soil deficiencies, any land that has previously been a conventional lawn has likely lost many of the beneficial insects that are supposed to live there. The things that are good for a verdant lawn are barriers to a healthy garden, a legacy of wasted spraying and mowing that will take time and effort to undo. Never fear: nematodes, earthworms and other helpful critters are all available to purchase. Of course, the unwelcome bugs tend to survive the insecticidal treatments strangely

unscathed, and without sinking to the level of all-out chemical warfare the options are limited. There is a small range of safe plant-derived insect repellents on the market, along with homebrewed remedies of wildly varying effectiveness, but that's about it in terms of the immediate responses. In the long-term, the system's vigor and diversity is supposed to be its own best defense, but it could be years from now before that critical resilience is built up. Predator species can also be bought back, acting as imported mercenaries, but that leads deeper into the puzzling world of creatures-as-commerce. Despite all the other ridiculous things we're doing to convince the plants to thrive, air-mail insects just feel like a step too far.

Luckily, by the time we had moved into the old white farmhouse, the days of a neatly trimmed lawn were at least partly behind it. Left to neglect and the forces of natural growth, a large section of the yard had instead morphed into a feral grassland, a riot of weeds and saplings you could picture pioneers getting lost in. Still in the boundlessly optimistic phase of starting a new project, we opt for a traditional scythe and whetstone to tame the turf. It turns out that the motion for swinging a scythe has almost no analogue in modern activities, twisting from waist to shoulders to cut an arc, arms kept in a constant half-bend to hold the blade steady. My efforts on this front are almost comically inept, and the physical spectacle may not be the most absurd part. After all, this eighteenth century solution, with all its trappings of agrarian authenticity, had to be shipped in from parts unknown. None of the local shops recognized a scythe as anything other than a Halloween prop, so yet another piece of this old-fashioned pursuit likely arrived to the regional post office via jumbo jet.

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The whole process is enough to make me wonder how the earth goes on populating and vegetating without all of these aids. Trees grow, wildflowers bloom, vines climb up towards the sun, and they all do it without any help from us. Even previous civilizations presumably survived without

precision-calibrated fertilizer blends or a home soil-testing kit. Accurate or not, I carry an image in my mind of the simple life of farming, of people sowing and harvesting with the circling sun, at one with the world around them.

That image is persistent, lurking in discussions of local foods, organics and the push for a return to small-scale community food-systems. It's a vision that feels right, comforting and wholesome, harkening back to sepia-toned memories of family farms that most of my generation doesn't actually have, but is happy to imagine. In fact, it may feel a little *too* right, as if it was hiding some inconvenient complications. If we are going to speculate about the myriad benefits of cultivating close to home, shall we also guess at its possible downsides? That idealized image could easily disguise a potential for crop failure that made farming feel like high-stakes gambling, financial solvency always at the mercy of mercurial weather and mysterious diseases. It could disguise dullness and drudgery only slightly alleviated by the notion of morally upright work, the marginal consolation of "honest" labor. The nostalgic image could just as easily obscure generations of dogged research and calculation, the testing of techniques and varieties in a process that requires the rigorousness of experimental science without any controlled facilities or university budget. The possibilities are unsettling.

This is not to say that there aren't any benefits to garden work. There is the measurable sense of accomplishment, for one thing. A row of green plants climbing the fence becomes a bag full of rattling pods, then a bowl full of little smooth-coated beans. A pile of manure over here becomes a pile of manure over there, and you can watch the change with each load you shovel. At the end I am tired, but feel a sort of perverse smugness about it- as if I would look down my nose at people whose lives did not include moving manure, because they were missing out on the profound authenticity of existence. This is, to use the obvious phrase, crap, at least to a certain extent. There is not necessarily anything

more authentic about flipping horse pucky than flipping switches on an assembly line or flipping burgers at a restaurant.

Yet the feeling persists. Perhaps this is another effect of the idyllic images of the past, making it feel as if physical work is more *real* than intellectual efforts. In an era when most people don't work on the land, when we all go to offices, storefronts or hospitals, why is there still a sense that we should instead be walking behind a plow, felling trees or digging ditches? I suspect that few people actually want to do this for very long. If the garden is one source of food and satisfaction, it may be improved by the fact that it is not the primary one, more enjoyable as an element of variety than it would be as the linchpin of a livelihood. If the weather is poor out, I can stay inside. I can toss aside my gardening plans for the day if I'm feeling ill, abandon ship if some other deadline diverts my attention. At the end of the day, it may be gratifying partly because of the light-hearted realization that my life will not worsen significantly if the rows of sprouts gets gnawed by insects or the clusters of potato plants succumb to mold. As a privileged member of the modern world, I have the freedom to fail.

If I had to commit the whole day to it, and the next day, and the day after, I don't doubt I could start to resent the garden. If I had to go out rain or shine, in sickness or health, regardless of what else was happening in life, the land could begin to feel more like an obligation or even an adversary than a partner. Does Wendell Berry take this into account, I wonder, in his vision of a nation of independent farmers? Does he understand the fickleness of human affection, the slippery ways in which one can fall out of love with the land when it seems determined to oppose you? Surely not every farmer's kid who leaves home for the big city does so solely because of nefarious economic structures and the predatory reach of corporate conglomerates. Some must simply be tired of hanging around the homestead, hungry for some other way of existence which is not necessarily better but simply *different* from the life they've known.

After all, I can't imagine that anyone's office memos or engineering plans are that much more complicated than the running of a farm. Even at the limited scale of three garden beds the plans look sufficient to organize a moon-launch, spreadsheets full of start dates and transplant dates, schematics of rows with individual holes color-coded by species and nutrient treatment, books and guides bristling with bookmarks. Perhaps if I had grown up working on this land, following in a long line of people who had used it, I wouldn't need this kind of formal study. I might have already internalized the signs of seasonal shifts, or learned the patterns of planting succession so early in life that they felt deeper than memory, growing up with the smell of this precise soil as the sensation of home.

Unfortunately that's not the case, but you have to start sometime, even if it's more or less from scratch. What's more, I suspect I'm not alone in beginning with the very basics of learning how to relate to the land this way. The recent trend towards organics, CSAs and urban farms have given vegetables a sudden social cachet, and thrown a new generation with little experience headlong into agriculture. If they're like me, they're more familiar with the pastoral imagery of gardening than with the real thing. How long does it take to unlearn these idyllic yet inaccurate notions and come to grips with the deep, analytical thinking actually required by the original *earth science*? How many people push through when they realize that bad weather, bad timing, or simple bad luck can trump even the best preparations? After all, we are not just up against the vagaries of nature anymore, nor even our own innocent ignorance. Anyone planting their seeds today is in a sense facing down years of mistaken assumptions. They are pushing against the legacy of whole generations who were misled to believe that brute force and chemical discoveries could compensate for every challenge of farming, from poor soil to paltry knowledge.

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When natural systems work they seem nearly unstoppable, resilient and efficient. The mechanisms of natural growth and regeneration are elegant beyond anything we can dream of designing, invisible gears sliding silently along below the surface of creation. Yet, there are now companies that ship bags of earthworm casings to your house. Clearly, something is not right here. Once this system has been disrupted it can be incredibly difficult to restore. All of our attempts to replicate natural order appear intrusive, overly elaborate, and unreasonably expensive. The plants seem determined to die long before reaching maturity, growing slow, contracting blights and getting mowed down by hungry insects.

It's not a strong endorsement for humans that all our intelligence, planning and preparation cannot manage to mimic the natural working of dirt, water and sun. What we make is a facsimile, something that will allow us to limp through on until the real system recovers, that glorious time when we can scale back the extra additives and hand the reins more fully back to nature with a sigh of relief.

How long will that be? I don't know. Nutrients can replenish relatively quickly, after a few seasons of beans and their friendly bacteria, or some other beneficial cover crop turned back into the earth. Other things take longer, perhaps geologically longer. If the topsoil is lost, as it has been in so many places, the time it takes for rocks to weather back into good loose loam may be measured not in years or even a lifetime but full generations. If species and crop varieties are lost, how do they ever recover, without the doomsday seed banks and artificial reintroduction that endangered variants now depend on? The cycle of the seasons tells us that everything begins anew in the spring, but that guarantee may not hold anymore. After so much indiscriminate alteration, we may manage to set even the wheel of seasons askew on its axis.

I want this to be just my anxiety talking. As I sprinkle potato food on the potatoes and asparagus food on the asparagus, lifting the gritty sandy mix out of bags labeled with chemicals measured to the

tenth of a percent, I want this to be just a stop-gap measure, not the new normal for growth in the garden. I look at butterflies bobbing on the heads of wildflowers along the fence-line, circling the buckwheat on the fallow ground, and try to see these as signs from the world that everything is going to be alright. I wish for the inscrutably complex engines of growth to run on in their own independent natural rhythms, biotic and abiotic worlds meshing beneath the ground in cycles that have lasted millennia. And they might. A garden traffics in tiny miracles, after all. Every plant that manages to blossom into maturity has already beat tremendous odds. Every seed we plant already has a driven, defiant optimism within it, expectant energy ready to race the pests, blights, droughts and floods. Despite all the complications that come after, at first there are the seeds, and seeds always have hope.

Seeing Hellbenders

The hellbender salamander is a creature that has refused to acknowledge time. Reaching as much as two feet in length, it exists as a slimy evolutionary throwback, shuffling along creek beds after crayfish as if nothing has changed since the dinosaurs' day. Hellbenders regard the world through beady eyes perched atop flat spatulate heads, wavering along as much by the efforts of their keel-like tails as their stubby little legs. An undistinguished muddy brown, they may ooze a number of things, but charm is not one of them. Some people call them snot-otters, others mud-puppies, and in the old days there were even nicknamed Allegheny alligators, thanks to their formidable size.

Allegheny College, where I spent my undergraduate years, doesn't use the hellbender as a mascot. As a biological oddity practically a stone's throw away from campus, you would think the salamanders would be a natural emblem, a way of celebrating the unique local surroundings. Hellbenders live quite happily in the soggy northwest Pennsylvania climate, and in the more particular neighborhood of French Creek they're something of a signature species. Unfortunately, the aesthetic problems may be just too much to overcome. I have a t-shirt emblazoned with an artists' rendering of the hellbender, and truth be told it's pretty much a brownish blob. Any creature whose image requires labels differentiating head from tail may be a tough sell for the recruiting brochures.

Then again, perhaps the problem is not with the snot-otter alone, but with another un-photogenic throwback. By adopting the hellbender and embracing its location, the college would have to come to grips with the city of Meadville as well.

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Meadville, Pennsylvania, does not act like a college town. It is a factory town which refuses to acknowledge the end of the golden age of American manufacturing, prime rust belt territory with delusions of economic endurance. With only two plants left in operation, it still puts on steel-toed boots

in the morning and moves with the rhythm of assembly line shifts, patiently awaiting the return of a heyday that's been gone for nearly fifty years. The first big billboard on the edge of town declares it still "Tool City, USA", an assertion that is more optimism than fact, despite the loyalty of the Channellock wrench company. The streets are lined with hunching row-houses, the chipped paint covered up with Steelers banners, sagging porches made hospitable by plastic lawn chairs. Thanks to the low rate of car ownership, the sidewalks always have a steady stream of pedestrians heading back and forth across town, interspersed with the occasional family using a commandeered shopping cart to get the groceries home. When the wind is blowing from the southwest everything smells like the dog-food being churned out at the Ainsworth plant. People like to say that the wafting kibble smells like money, but after a while it starts to gall.

Downtown the windows in the empty storefronts are covered in layers of banners and painted advertisements, one showing through the other like a palimpsest of unfounded optimism. There's always a new store popping up though, rapid-fire cycles of renovation and dereliction, each failure making room for the next project to take root. Meadville exists in a precarious position, right on the edge between resurgence and collapse, never quite tipping one way or the other. The medical center and the college help employment some, but the best paying jobs at those institutions seem to go to out-of-towners. Everyone else just has their little ways of getting by. Sometimes it seems like the whole town is engaged in swapping homemade odds and ends, a cash-free supplement to the ample supply of thrift and second-hand stores downtown, all of it somehow still not enough to fill the gaps. Roughly a quarter of the population receives nutritional assistance from the federal government, and the number that really need it may be higher. The notion of getting "handouts" sits uncomfortably in a community that has long defined itself as a place that makes, that forges and hammers and creates something new out of raw material.

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Hellbenders occupy a position that is in some ways no less precarious, officially listed as “at risk” throughout their entire range. Part of the problem is that they breathe through their skin, a process known as cutaneous gas exchange, which is facilitated by the rich network of capillaries hidden in the mud-colored folds of their flesh. This is part of what makes them unique, anomalously ancient, but it also makes them very sensitive to water quality. Reductions in oxygen, sedimentation and chemical runoff of all sorts can cause them to decline, meaning that anything from an eroded stream bank to a parking lot sewer grate can spell trouble. Hellbenders just aren’t that well designed for the tough neighborhood that modern waterways have become, and it takes a fair bit of support to help them get by.

To that end, there are several French Creek cleanup projects every year in Meadville, with the one on Earth Day usually the biggest. Where the creek is wide, people go out in canoes and kayaks, fishing around in the middle of the river for the big submerged stuff, sometimes pulling out whole shopping carts or old tires. The rest of us range along the bank, armed with trash bags, scooping up cans and bottles for the recycling center, separating out less identifiable junk destined for the dump. Volunteers backtrack up the side-streams too, following the tributaries as they dwindle in size, pulling out bits of unidentifiable metal half buried in the mud, plastic flowers washed down from the graveyard, all the inexplicable debris that somehow funnels down the little channeled valleys. Cleanup days take place rain or shine, and there’s always a reasonable possibility that we’ll be out in a steady spring soaker, the kind that turns the roadsides into rivers and raises the creek up into a brown churn. With 44 inches of rain a year and more soggy days than sunny ones, Meadville seems like a good place to be an aquatic creature. The wet weather can be less welcoming for humans, but the mood on clean-up days is usually cheerful regardless.

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For all the talk of the delicate disposition of the hellbender and its fellow indicator species, French Creek still has its fair share of those unique specimens. Four endangered mussels call the creek home, and a whole host of less rare varieties filter along unperturbed. It's a funny little paradox- a waterway which regularly makes the Nature Conservancy's list of biodiversity hotspots running through a town that most outsiders wouldn't think had any Nature at all.

Nature is there of course, but when I first arrived I found it hard to see. I only noticed the little details of decline- empty houses on Park Avenue and old men smoking in front of the Meade Inn, cracked sidewalks and potholed pavement. I'm not sure how I got so lazy, thinking that the beauty of a place should be easily identified, made obvious to visitors from the very first. It's a tourist mentality, that expectation of overt appeal, and I thank goodness that I grew out of it quickly. As it stands, if I hadn't gone to a single college class, I would have still learned something useful from my years in Meadville. I would have learned how to see.

It's hard to pin down a point, a particular moment when things came into focus. It could be that you see the character of a place the way you spot something through a depth of water, wavering and unclear at first as your eyes struggle to adjust, then suddenly unmistakable. Maybe the first thing I noticed was the little piece of rail trail, the one that starts unpromisingly next to the auto repair place but then crosses a little covered bridge, cutting through farm country and fallow fields full of high grass, tracing along the creek where the trees burn orange in the autumn.

Perhaps it took more time than that, through the fall and on into winter. Light Up Night brought the families down to Diamond Park then, the little green in the center of town suddenly full of carolers and spectators, while Clydesdales borrowed from local farmers pulled wagons full of children bundled up against the cold. I feel certain I must have begun to see things clearly by early spring, up to my knees in a snowbank, holding a yard stick up to some gnarled old maple for the annual street tree survey, with

my face almost against the bark. The clarity was well in place when the weather turned warm and the farmers' market got into its Saturday rhythm, baskets loaded with greens and peas alongside tables full of Amish baked goods or bunches of cut flowers. Far from finding Meadville depressing, I was becoming defensive about it, inclined to argue with any student or professor who complained about the gritty ambiance or gloomy weather. I can only hope that learning to see always goes in that direction for me, rendering the ugliness flimsy and illusory, to reveal something else underneath.

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I have never been fortunate enough to see a hellbender in its natural environment, although I've seen a captive one before, an adolescent specimen cooped up in a fish tank. I feel certain that's not the right kind of experience, that it's cheating somehow to have things made so easy. If I ever got a glimpse I would want it to be in the creek, maybe on a cleanup day after the work is done and garbage bags are tied up, with people laughing and getting ready to head home. I want the hellbender to have been hidden in the mud the whole time, just waiting for my eyes to adjust, to hone in on its ungainly prehistoric silhouette. I want the murk to suddenly come into focus as a creature that is at once fragile and defiantly persistent, unlovely yet somehow charming, which has been just waiting for me to learn how to see.

Permission

Sometimes all you're looking for is permission.

Between junior and senior year of college, when I was supposed to be brushing up my resume and penciling in post-graduation goals, I was questioning the value of writing. I don't mean writing in the general sense- I believed then and still believe now that words can change things, subtly reshape the way we see the world mind by mind and story by story. My concern was more that not all tales are created equal, that for some of us the time and effort involved in composition will never add up to any serious impact. After all, the world must turn on stories of wild adventures and majestic landscapes, the natural tragedy of destruction and its accompanying miracle of rebirth, the extreme realms of ecstasy and awe. Compared to those vital tales, maybe some narratives were just too dull to make much of an impression. Perhaps it would be better for me to redirect whatever force of thought and intent was currently going into writing towards helping build a trail or pick up litter, to focus fully on tangible work rather than pouring time into something as uncertain as the force of my own flimsy words.

I had auditioned in to this summer writing festival, held at the western edge of New York, with a natural history piece in which the word "I" appeared just often enough to let me skirt the stigma of academic writing. While the participants in the other genres contained a healthy proportion of other wide-eyed college students, non-fiction was (other than me) the land of the grown-ups, competent composed people with teaching positions and a ten year plan. Worse yet, they had big stories to tell, about travel and tradition, faith and endurance, shattering loss and the renewal of solitary nature. They had paid their way in here to find publishers for memoirs and manuscripts in progress, while I was school-sponsored for the nebulous purpose of academic enrichment. Getting tired of re-explaining my presence to puzzled questioners, I started borrowing a line from Willy Wonka that wasn't far from the truth. "You see, I found this golden ticket…"

The hotel-cum-festival site was on a lake, and fog rolled in to shroud the shore each morning, turning everything pale and soft-edged. I would get up hours before any lecture or meeting started and walk around the empty streets of the off-season vacation town, wandering aimlessly in the gray morning quiet until tiredness wore away some of the anxiety of being somewhere I felt I didn't belong. The network of private lanes were all interlinked in ways I never quite comprehended, so that I could speed up and take turns at random, pushing through horizons formed of drifting banks of fog in an illusion of escape only to find myself back at a familiar landmark, the bright splash of an elaborately painted cottage blooming suddenly out of the whiteness. In retrospect it was a stupid way to spend my time, when a wrong turn or a long detour could have made me late for whatever class was kicking off that morning, but somehow that never stopped me. Maybe I was looking for some confirmation in the repetitive risk, as if the luck that turned me back just in time would act as an antidote to uncertainty. Usually the only person I would see from start to finish of this strange morning ritual was one older gentleman in a baseball cap hanging out at the front of the hotel, just sitting and staring out into the mist with a notebook on his lap. I can only assume that there was a quality of peace in the damp summer morning that was visible to his more experienced eyes.

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One of the touted highlights of the festival was the chance to meet a real live author one on one, although given the circumstances, perhaps not in their natural habitat. I'm not sure why I didn't connect the dots sooner, but it took meeting in the exact same spot at the front of the hotel to realize that the man who appeared to spend each morning lost in contemplation of the lake fog was one of the real-deal professionals. Imagining such a meeting earlier, I thought I would bring incisive questions, soliciting wisdom on craft while managing a plausible imitation of the professionalism that everyone else seemed to possess. In reality, I spent much of the allotted fifteen minutes in verbal free-fall, blurting out

how much I feared that all the places I knew and the meager experiences I had accumulated thus far in my life were too boring for anyone to be moved by them.

The response was careful and empathetic, delivered with unflappable Midwestern politeness. There was something about the unfathomable ripple effects of well-intended work, the many forms of activism, and the process of building competency on simple subjects. In truth, acute embarrassment has mangled the memory, and the exact trajectory of that conversation is veiled in its own kind of mental mist.

What I do remember clearly is a reading later that day, the same author speaking from a podium at the front of the hotel ballroom. It was probably just a prepared piece, chosen in advance for length and ease of enunciation by a man fatigued from facing unstable students like me for days on end. It didn't feel that way. He spoke about the joy of finding small instances of beauty hidden around us, of acknowledging the implausible, irrational generosity of a world where every seashell has its perfect arcs and every flower basks in symmetry.

Nothing much happened in the essay. The author walked around and gently described the scenery, not with arms thrown theatrically wide towards calendar-worthy vistas, but pointing down at the readers' feet, at things crawling along between fence-posts or washed up on shorelines, at subtle inflections of light and shade that miraculously occur every morning. The objects described were ones I had seen before, but suddenly rendered remarkable, evidence of a world that was overflowing with exuberant energy, so profligate with bright colors and elegant shapes that we stumble over sublimity with each step. I know that every audience takes what they need from the words they are given, making something new and sometimes strange out of the author's original intent. I may be wrong about the meaning in those words. Yet, it sounded like permission.

Almost Heaven, West Virginia

When my grandfather dies, he will go home. I'm not talking about clouds and angel wings, or some kind of new-age mystic transcendence. I mean that he will take one last road trip, returning north at the end to the place he spent most of his life, to gentle hills and second-growth forests in the middle of Appalachia. When I say that he will go home, I mean Barbour County, West Virginia, and now that I write it I'm not so certain I'm not talking about spirituality after all.

I don't know what route the journey will take, but I like to think it will follow the same roads he would drive to the family reunion, retracing steps that were repeated year after year. The newspapers followed the route the other direction, copies of the Inter-Mountain and Goldenseal transported all the way south, arriving like old friends with their familiar names and places intact. Landmarks pile up in the mailbox: Belington, Philippi and Elkins, maybe the peaceful scenery of Audra State Park, or the Tygart Flyer running its route on antique rails. It's geography at a distance, a gentle affirmation that the landscape of memory still exists in the physical world. When he was in the hospital in North Carolina this summer, confused and uncomfortable in the world of white walls and antiseptic, the first thing he asked for was those papers.

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West Virginia exists for me at one degree of remove, less like a real place and more like a repository of history, a landscape formed out of family stories. I can't claim it as home the way my father and his brothers could, or the way my grandparents almost certainly would. Yet, it's equally true that I can't fully distance myself from it. I can't stop worrying at that tenuous connection, trying to put together the anecdotes and pieces of other people's memory to form some larger meaning. In my more grandiose moments I imagine it as like being a child of immigrants, fascinated with an old country that is always both familiar and foreign.

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"When I was in school," my grandfather said, "you only had to know three things: reading, writing, and the road to Ohio." It was the second day of my visit and he was looking markedly more lively and alert, even though he was still slumped at an awkward angle in the jointed hospital bed. The nurses had been checking his memory regularly, along with seemingly everything else, and something about their list of questions had spurred him to try out a joke. He doesn't seem to realize that this particular punchline just won't translate into a Carolina drawl. Ohio, for the purposes of the joke, means industry and blue-collar stability, factory work and reliable union jobs. Being taught the road to Ohio meant being told to get away while you can, out of a place that was even then being categorized as done for, fallen too far behind the world to ever catch up. The nurse smiled vaguely and moved on to examining the blood clots in Grandpa's arms, peering delicately at the red and purple patches blooming beneath his skin.

Grandpa told the joke and then he laughed, a rumbling, subsonic chuckle. I'm certain, if I were to count, I've heard his laugh more often than I've heard him really speak. Little habits like that have a way of fading into the background, and it has taken me a long time to hear his laugh changing. There's a rattle at the root of it, like the slack buzz of a drum with the snare loose, and it's been growing more pronounced every year.

If he were to finish the joke up properly, he would probably say that those lessons in school didn't work. The family went to Ohio when my father was a baby, and Grandpa got a factory job, just like he was supposed to. Within a year the factory shut down, and they went right back to West Virginia. Three-quarters of Grandpa's life, sixty years or better as far as I can figure, were spent in the Mountain State. Since leaving, I've never heard him say that he misses it.

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I got a chain email from my grandmother a while back, featuring one of the few flattering jokes I've ever heard about West Virginia. Churches around the country, it begins, have started installing special phones which allow people to place a call to heaven. This being a unique privilege, the prices are set accordingly, and people from New York to California are emptying out their savings accounts just to make a single call. Finally a traveler passing through notices a little church in West Virginia, where the sign out front declares that the price for their celestial phone is just a quarter. Looking to give some sound financial advice, he kindly asks the pastor why the price isn't higher. "Well, it wouldn't be fair" the pastor answers, "to charge so much for a local call."

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Keeping in touch is Grandma's job- she has always done the talking for them both, and it was true more than ever when he was sick. The phone rang at all hours, filling up the house with voices of friends and family from all over the country, all asking how she was holding up. She was seventeen when they got married, a straight-A student and habitual worrier, seeming to have skipped straight past carefree youth. He was a couple years older but still somehow more juvenile, the prankster and fatherless wild-child, trouble in a harmless, small town way. It's funny the way those younger selves stick around, returning to the surface long after they seem forgotten. The doctor told Grandpa to take his medicine, and he asked "with whiskey?", then started in with the laugh again, that strange sonic mixture of mirth and decay. Grandma's congregation offered to come visit her, and she immediately switched into planning and cleaning mode, trying to ensure she made a good impression.

Still, it's undeniably been a long time since those "I do's". Their fiftieth anniversary party, for which the whole family flocked once again back to West Virginia, is well in the rearview mirror now.

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If you only looked at the place in terms of facts and figures, you could be forgiven for thinking that West Virginia exists primarily as a place that things come from, a whole state functioning as a point of departure. It's the second largest coal-producing state in the union, the largest east of the Mississippi, and claims the dubious distinction of having the most subsurface mines. Almost 95% of the coal dug from those hills is loaded up and shipped out to places near and far, from just across the line in Virginia all the way to the other side of the globe. Even that small proportion of coal that's burnt in the state doesn't necessarily stick around- 45% of the electricity generated by coal plants in West Virginia goes to light lamps in other states. The substance of the mountains is departing, one truck and trainload at a time, the actual ground disappearing from under people's feet. Even those little electrons from the power plants are running as fast as they can, zipping through the transformers overhead to the illuminate the nightlife of cities far away, perhaps following the proverbial road to Ohio.

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Every time my grandfather would try to quit smoking, everyone knew it wouldn't last. There would be a few days where he would go through the motions, filling up the shirt pocket that usually held smokes with hard candies, as if intent on literally leaving no room for error. Then the little excursions would start- slipping out to take a walk, take a drive, go to the store when nothing needed bought. As if my grandmother wasn't already attuned to the smell of smoke, he would take his little adventures, trying to put off the moment when she found out. He might not have bothered with the charade at all, were it not for the fact that Grandma tends to view his smoking as a deeply personal slight, a betrayal almost on the scale of infidelity.

"If you loved me enough", she seems to say, "you would quit."

Of course, addiction isn't arithmetic. It doesn't operate like a set of scales, the things that are lost weighed out against what could be gained. It's more slippery than that, more deceptive, gifted in

rationalization and self-defense. It bears mentioning, perhaps, that there is no shortage of stories of unbreakable habits in our family history. They run like a refrain through the background of the stories Grandma tells in the evening, when she has finally given up her fussing in the hospital. One ancestor was an amicable drunk, the other maliciously rowdy. This one was never seen without a pipe and that one travelled constantly, frittering away his money as he rambled between towns. None of them, it seems, could separate the action from the self, habit tangled with character in a way that simply couldn't be unraveled.

I couldn't sleep during my visit, even watched over by Jesus in night-light form, so instead I laid awake and wondered. Is that need inside of me somewhere, a deceptive and deep-seated craving just waiting for the right vice?

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The state slogan of West Virginia has changed several times within my lifetime, flipping back and forth like a barometer for the general mood. The classic catchphrase, and still my favorite, is "wild and wonderful." It's punchy, alliterative, and for those who really love the gentle roll and lush greenness of the land there, undeniably true. For a few years though, the words "open for business" replaced "wild and wonderful" on the welcome signs and other tourist materials for the state. It was not only an uninteresting tagline, but on the interstate coming down from Pennsylvania, woefully redundant. Almost as soon as the state line is crossed, all a visitor needs to do is look to the right to see just how open things are- the hill broken down into grey rubble then hastily re-formed into a squat mound, a thin layer of turf just barely covering the unnatural angles left behind by the earth-moving machines. Electric lines topped with blinking lights run across the slope of the excavated faux-hill, and last I saw it there were still a few construction trucks lurking around, keeping an eye on the reclamation project.

The shaft mines are older, and they feel less threatening from my modern vantage point, when so many had already been rendered relics decades before I was born. My father said that back in the days of Cold War panic, the children were taught that if the bomb was going to drop they should go hide in the abandoned space of horizontal shafts, protected from the terrible radiation above by the solid, forgiving earth.

It puzzles me how these things could fit together, that the same physical space might be a place of destruction and one of sanctuary, a shelter from disaster and a disaster in its own right. There is something strangely internal about the landscape as a whole, every hollow and steep-sided valley feeling like its own little world, secretive and close. The story goes that the first settlers in what would become Buckhannon lived in the trunk of a huge hollow sycamore through their first homeless winter, curled up like squirrels against the wood as the snow fell outside. From the very beginning there was something about the landscape that enfolded, that took people in and held on. It's tempting for me to ascribe some natural force to the out-sized role the family collectively ascribes to that part of the world, as if it is the land rather than us that doesn't want to let go.

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For the last few years Grandpa has been on an oxygen machine more often than not, filling their little house with a thumping wheeze as the equipment breathes along with him. Big diamond-shaped signs hang on the door, clearly warning everyone who enters the house that the gas is highly combustible. Grandpa is the only one who doesn't take the hint to proceed with caution. Once he went out and smoked a cigarette while still hooked up, tubes running down from his nose to the pumping machine, and that little glowing ember wavering right beside it.

It almost sounds like satire, wandering along the edge of self-destruction that way. In the moment it isn't funny. I don't even know that he sees any kind of irony in it. It's become more like a fact

of life at this point, a contradiction too fixed to even be worth acknowledging: one thing he inarguably needs to live, and the other he can't seem to live without.

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Environmentalists are always looking for the argument, the appeal, the photograph or essay that will push the general public to a new level of activism. This image, they seem to say, this poem, this painting, this sheet full of statistics, might just be the signal you've been waiting for. I've generally accepted that this is how things work, if not all the time, then often enough. Some days I'm beginning to wonder. The problem seems to be that the difference between sustainability and waste in this scenario, the distance between a bicycle and an SUV, is based on a person's internal motivation alone. Campaigns reach out to an imaginary public that fastidiously weighs the strength of their desire to help against the pleasures they will have to give up, and then goes forward, clear-eyed and resolute. All it takes is something to tip the scales, an extra piece of heart-felt information that causes you to call upon your inner reserves of character and finally act. It feels almost a little desperate at times, the faith that one more ad with a sad polar bear is what it takes to change a life. If you loved the world enough, all these messages seem to say, you would quit.

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In 2009, West Virginia's coal industry was responsible for $3.5 billion a year in gross state product. It contributed $70 million in property taxes and $214 million in severance taxes to state coffers. Industry employees collectively made $2 billion on big coal's payroll. Those numbers sound impressive, and their impact is exaggerated in a state where the poverty rate is almost 18%, 38th out of the 50 states in terms of economic wellbeing. Even that figure is only an average, buoyed up by commercial bright spots like Morgantown. In Barbour County, where my grandfather was born, the poverty rate is nearly 21% and less than 12% of people have earned a Bachelor's degree, well below half the national

average. Yet, it's equally true that acidification from mine drainage paints the streams orange, that people live in fear of leaking waste impoundments, and that industrial accidents like the one that deprived most of Charleston of drinking water in 2014 are all too common.

For now the whole state is living in contradiction, and no one yet has found a way past it. Clean air and water are inarguably something you need to live, yet for now it seems like this industry is something we collectively can't live without.

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Now I come to the place where I have to put my own lack of credibility out in the open. When I went to see my grandparents for the visit that occasioned this essay, I could have taken the train. I could have taken the bus. I know the statistics on emissions, fuel usage and efficiency, and I knew that mass transit was without a doubt the right way to go. I laid out the routes, priced the tickets, contemplated doing the thing that was closest to right for the earth. Then, I didn't do it.

I got suckered by speed, the convenience and deceptively low cost of doing things the wrong way. By the time I was in North Carolina, wondering if addiction was in my future, a certain kind of addiction was already evident in my past. It wasn't an attachment to smoke or drink, but simply to the modern addiction of getting what I want when I want it, refusing to put my time and discomfort on the line for the sake of something bigger. I had reasons for it at the time, but they don't really matter now. The only thing I can say in my defense is that addiction isn't a matter of simple arithmetic.

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Slowly but surely, the tourism industry is gaining ground in West Virginia, revenue growing steadily every year. Workers made $912 million from the tourism industry in 2008, and $591 million in taxes were collected. As socially uncomfortable as tourism can occasionally become, this may be a

substantial source of hope, offering a tangible monetary incentive to keep the landscape whole and aesthetically pleasing. “Wild and wonderful is printed on all the brochures again,” I imagine some state official saying, “so by god we had better live up to it.” There are zip lines and raft tours, campgrounds and gear shops, all counting on the allure of ecosystems that are still recovering from historical wounds.

I have no idea if the tourist trade will be enough, if it can ever be enough, when an industry has been so entwined with a place for so long. After all, there are tourist attractions that are themselves themed around coal- a mini golf course where the obstacles are made of old mining equipment, guided tours of restored underground shafts, even historical walks through the abandoned mine towns, tipples and powder houses lying half submerged in resurgent greenery. Even if the mining stopped tomorrow, the past would have a way of making itself felt.

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“We’re lucky that he made it this long,” my father says when I tell him how Grandpa is doing. I was expecting a little more reaction than this, to be honest, but Dad seems to have hit a point of philosophical peace on the subject. “I remember the Lee boys who lived up the hill, even when I was a kid their father’s lungs were already giving out.”

“Because he worked the mines?” I ask, suddenly aware of my family as an anomaly, lucky escapees from the grasp of black lung.

“Could be,” says my father slowly, “could be because he smoked a pack a day, unfiltered. Hard to say which is worse, really.” Even today, with everything we know about tobacco, 28% of adults in West Virginia smoke, the second highest rate in the country. Back when grandpa was first filching cigarettes out of his older brothers’ pockets, no one was yet sure that it was even dangerous.

The upshot of this data from the standpoint of environmental advocates is precisely what my father pointed out- proving causation of coal-related health problems becomes nearly ridiculous when the victims involved have been voluntarily withering their own lungs for years. How do you separate acts of free will from the long arm of industry, or differentiate between economic coercion and willful ignorance?

Maybe you don't at some point. Maybe we can't expect willpower to stand alone or character to be separate from habit, destruction standing apart from sanctuary so that we can easily judge between them. Maybe you have to leave the knot still tangled, give up the attempt to sort the world into worthy victims and unworthy wasters, and begin again from there.

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The pastor keeps coming to visit Grandpa in the rehab facility, and I realize that he means well, but after a few too many "damn yankee" jokes at my expense, I'm no longer feeling any Christian goodwill towards him. He joins hands with my grandparents for yet another prayer, imploring the Lord above to make things better, and I stuff my hands deep in my pockets. In my mind some perverse impulse is stirring, an opposite prayer composing itself against the backdrop of his words. What's the reverse of the Lord above, the distant face looking down at us from the sky?

"Our Lady underground," I think to myself, "at the roots of the mountains and in the hollows of trees, in the enfolding hills and the derelict dark. Our lady of the tangled past, the scarred sanctuaries, the beautiful, battered lands. When Grandpa goes home, welcome him in."

Treading Lightly

First I put on the rubber gloves, then the cloth gloves over top. The doubling up was necessary because I would be wetting down the outer layer with blue herbicide, a substance with a tongue twister of a name which apparently shouldn't be directly against my skin. I had already strapped on stiff canvas guards that wrapped my legs from knee to boot-laces to protect me from snake bites, and sprayed my pants with bug repellent in a committed but ultimately futile bid to keep from getting chewed by chiggers. I was ready to be one with nature.

Actually, I'm not joking. It was a beautiful summer day and I was out in a large field of wildflowers, picking my way carefully through the stalks of sunflowers and milkweed, blazing star and coreopsis. In places the mass of foliage rose over my head and was so dense that I wasn't walking so much as swimming through the greenery. As soon as I had waded into the prairie, any direction I looked was full of nothing but a tangle of stalks and stems, making the field see much larger and wilder than it had from the cleanly mowed path. Butterflies drifted past in the still air and grasshoppers launched themselves away from my feet with tiny percussive sounds. Somewhere beneath the ground mudbugs and massasauga rattlesnakes waited out the heat of the day in their holes, perhaps feeling the faint vibration of my passage. Putting aside the sticky, itchy sensation that inevitably developed as the day went on, it was as close to a classic pastoral scene as a person can reasonably expect. Just another beautiful day to be a volunteer in the local state park- except for the part where I killed things.

That was, after all, the whole point of the expedition. I, and the other volunteers, were there to get rid of the pioneering tree species that had launched an invasion of the prairie, just as they did every year. In order to beat back the current batch of quaking aspen, hickory, and other fast-growing colonizers, we had to paint those species with the herbicide, isolating out a single stalk at a time and being careful not to get any of the toxic gunk on the more desirable plants that surrounded them. The

sheer number of plants involved made it deeply repetitive, but the need to avoid collateral damage required steady, constant concentration. In retrospect, I see that level of focus as a kind of mercy. As long as I was fully involved in the task itself, there was no need to ponder the ethical oddity of killing trees in the name of conservation.

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The Jennings prairie is a holdout, the last of a larger expanse of grassland that existed shortly after the glaciers withdrew from western Pennsylvania, an odd eastward extension of an ecosystem type more common to the mid-west. The inhospitable clay soil in this particular spot slowed the advance of the encroaching forest, and it is speculated that local Native American tribes intentionally set fires there to help preserve the open space. The botanist Otto Emmery Jennings, smitten with the wildflowers at the prairie, made the case for its official preservation in 1905. With the support of regional conservation organizations, the prairie was set aside as park land, saved from the agricultural conversion and mining that has altered so much of the landscape in the region. That kind of public effort would seem to give the prairie a bright future by default, but simply protecting a place from major development is not always enough to preserve its character. Continued active human intervention has kept the park in condition since then, employing everything from yearly controlled burns and mechanical invasive species removal to herbicides.

In one sense this place is deeply natural, offering a glimpse of the region as it would have looked well before the start of recorded history, when the soil hadn't yet recovered from glacial scouring and the climate in western Pennsylvania was comparatively balmy. By almost any other definition, it's unnatural, more of a botanical display than a normally evolving ecosystem. A couple miles down the road is a historic inn, preserved from the days of the American Revolution, and it's hard not to draw a parallel between the glassed-in artifacts at the inn and the delicate wildflowers here, which require such

active intervention to maintain their competitive advantage. Whether that's a fair comparison or not, I can't really be sure. The difference between preservation and domination is surprisingly hard to spot when you're wading through the middle of it.

On a philosophical level, it seems like the most natural action would be to simply relinquish control, admit defeat, and let the trees have their way. After all, the state of nature we are preserving must become increasingly synthetic with each soggy glove stripped across an aspen's delicate leaves. If heavily human-altered landscapes are in some fundamental way less vital or valuable than their unaltered counterparts, then what we are preserving is nothing more than a pretty shell. This is the "end of nature" that's been foretold, when the human inability to leave anything alone has finally made changes that span the entire globe. If we intensively manage even the places intended as sanctuaries, surely we've given up on exercising any degree of self-restraint, let drop the illusion of biotic independence altogether.

On a more concrete level, letting nature take its course on the prairie would most likely mean the loss of a unique ecosystem, the disappearance of rare and delicate flower species that have no analogous replacement in the state. In contrast, there's no shortage of saplings or plucky re-growth forest around, even within the park boundaries. If aesthetics have a place in the considerations, then surely something must be said about the delicate purples of blazing star and downy skullcap, the vibrant yellows of sundrop and whirled rosinweed, the unexpected red of Oswego tea and the veritable kaleidoscope of color presented by the butterflies that wander between blossoms. Summer in the woods is beautiful too of course, a cool respite with the sun filtering gently through the canopy of leaves. To be honest though, I could have found that sylvan scene much closer to home, and many visitors probably feel the same- they come to the prairie to see a natural community that falls a bit outside of their everyday experience, made lovelier by the fact that it is uncommon.

If the species involved have an interest in it, they might well like to have the status quo maintained- the blazing star and other sun-hungry flowers won't grow in the woods, and the massasauga rattlesnakes won't thrive there. Ecology teaches that a certain amount of destruction is an unavoidable part of natural cycles, the cost of doing business in a dynamic system. I can rationally accept that fact, but I don't think that would make the loss less bitter. So the prairie remains a prairie, and those who tend it make a conscious decision, stem by stem: stability over progression, flowers over trees, human control over unfettered growth.

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In the end, the question of whether we fight for the prairie or not may not be as critical as how we go about considering that question. Do we make the decision as the technological masters, the heavy-handed wielders of chemistry and mechanization? Or do we decide as members of a community, uncomfortably aware of the huge changes we're capable of making and determined to approach with care and deliberation? Parks and public spaces already have the power to cultivate community, capable of creating a bond between visitors based on the shared enjoyment of a physical space. For me at least, memories of hiking and outdoor exploration are closely tied to friends, family and classmates, interactions that derive a sense of ease and richness from the surroundings. Perhaps the serious guide-book-toting visitors wince when some overstimulated child sprints past, and the meditative silence-seeker might shoot a dirty look at more chatty folks, but the overall existence of such a space rests on a pact of mutual tolerance and shared appreciation. When it comes to public lands, common ground is more than just a metaphor. I can't help but feel it must be a short jump from sharing that sense of respectful restraint with your fellow humans, to including the place itself.

Despite all the gear, I didn't feel especially cut off from nature when I waded into the prairie. The shortest volunteer on the team, I suffered some teasing for being virtually swallowed by the

grasses, but there was something valuable in that immersion, being utterly surrounded by the world that I was acting on, not an inch of separation. It may well have been that what I packed for lunch that day or the type of car I drove to the park had a bigger impact on the environment at large than my limited efforts in the prairie. Yet, when so many of our environmental decisions are reduced to abstract speculation and carbon calculations, effects separated from causes by thousands of miles, there is something vulnerable and vital about being so close. Besides, if I had gotten caught up in delusions of human mastery for a moment, the impressive rash of bug bites I acquired despite the chemical spray would have set me straight.

As it was, we all had a better reminder. On the short walk out to the site, someone spotted a massasauga rattlesnake. A couple sightings in a season is often all you get of the little guys, who are too shy to be caught out around visitors, so this was something special. The snake was only a short ways off the path, twined motionlessly between stems to catch the morning sun, poised as if just waiting to be spotted. Even though they're still poisonous, something about their stubby pygmy silhouette puts massasaugas right on the border between cute and creepy, sparking less instinctive nervousness than their bigger, bolder relatives.

Everybody got quiet around the snake, careful and almost reverent, stepping up one by one to peer between the flower-heads while trying to maintain enough distance to keep from disturbing it. I'm sure I'm not the only one who suddenly realized that I wouldn't be able to see where I was stepping once I was out in the prairie, and spent the whole day taking slow exaggerated steps, pausing mid-stride to listen for a rustle or a rattle before finally putting my foot down. I couldn't have asked for any clearer message to begin a day of unavoidably presumptuous human management. We are not alone here, so we must be careful how we tread.

History and Story

Story turns up when you run out of history, when the fine detail has been forgotten and interpretations collide. Story seeps in between the black and white lines of the things we record for posterity, filling the spaces around the fixed dates and place names that are meant to be so secure. The work it does is uneasy stuff, weaving connections between unreliable memories, trying to pull together scattered anecdotes to form something complete and comprehensible. The reality of the past may be settled and set, but we cannot go back to see it. The version of the past we inherit is mutable, made up of both fact and fancy.

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Here are a few things I know for certain about my great-grandparents. Both Bud and Dee Dee were early drop-outs, education ending with grade school for him and junior high for her, leaping into adulthood while still functionally children. They married when he was twenty three and she was only fifteen, lying about Dee Dee's age to get the Justice of the Peace to do the ceremony. They moved frequently throughout their lives but never went very far, making a circuit of small towns and even smaller houses in central and southern West Virginia. Although they lived through the great depression and the Second World War, the challenges of raising six children on thin margins were probably more troubling than any of these seismic shifts in the larger world.

Both Bud and Dee Dee drank, and not the kind of moderate drinking associated with a harmless good time. They both fought, mostly with one another. They separated and got back together and then repeated the process several times more, constantly generating new rounds of grievances and unfinished business. Bud died in an accident no more than middle aged, electrocuted while doing yet another odd-job, this time painting a church. At that point they were on the separation side of the cycle,

barely speaking while they recovered from yet another fight and unaware that their opportunities for reconciliation were about to run out.

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There are many ways to go looking for history. Some people frequent museums, peering at significant artifacts through the glass of protective cases or parsing the paintings in their gilded frames. Some study the architecture of notable buildings to understand the lost world of the builders, while others tramp around the sites of ancient battles imagining the echoes of bloodshed. We all want the same things on some level, to get a tangible grip on the past, moving it out of textbook abstraction and into a world with weight and texture, something that can be felt rather than simply learned. I would guess that relatively few people go out of their way to incorporate abandoned coal mines into their family vacations, but it stems from this same basic desire. If I can get close enough to the physical world of the past, walk its paths and stand inside its collapsed walls, listen to the same blended sound of distant railroad and nearby river muffled by deep-hollow quiet, then maybe it will begin to make sense.

Here are some things I now know about mine towns. When they get old, the wounds healed enough to be hidden, the greenery coming back in quick-growing profusion, they take on a kind of beauty. The bustle of industry is gone, and everything is still save for the rustling of leaves and the occasional bird darting between branches. The cabins are just stone foundations amongst the moss, the company store reduced to a single free-standing doorway that frames the trees and the greenish water beyond. Coke ovens, once used to condense and cook out the impurities in coal, stand cool and empty now, domes of mortared stone with shapes vaguely reminiscent of beehives. The massive metal arc of the tipple watches over it all, one long rusted swoop from the entrance of the mine to the warehouse near the defunct railroad tracks where the product would have been sorted and loaded onto train cars.

Whatever touristic optimism caused the informational signs to be put up here in the bottom of the New River Gorge did not bear fruit, and the lack of other visitors preserves the ghost-town feeling.

From the signs I can pick up basic facts like the mine's dates of operation or the names of the owners, as well as some broad generalizations about the population of the town or the nationalities of the miners. Whoever wrote the sign text seems reasonably cheerful in their outlook: work was hard but pay was good, at least considering the low expectations set by the era and the region. The high-quality anthracite in the New River Gorge meant that the dreaded "damps," toxic or flammable gases stemming from impurities like nitrogen, methane or hydrogen sulfide, were rare. Because the journey from the low point in the valley where the houses were located to the towns on the rim of the gorge was so arduous, the mine towns functioned as nearly self-sufficient worlds, complete with houses, church, school and a company store stocked with the necessities, all squeezed onto the thin band of level ground alongside the river.

The signs and basic facts cannot fully capture the experience of life in the mine towns, however. For one thing, the miners were often paid in scrip, hard-earned currency that was worthless anywhere outside of that particular community, and expenses like rent for the company-owned houses were directly deducted from pay, gone before they even knew it. Even without the dangerous "damps" there was reason to worry about safety in the mines, from the sudden crush of a collapse to other smaller accidents, difficult labor in a dark place and the slow deterioration caused by inhaled coal dust. What is the difference between being secured and being trapped, from having no need to make difficult choices and feeling that you have lost the ability to choose?

The New River Gorge towns don't have a history of the kind of radical discontent that can be found in mine camps in the Kanawha River valley to the northwest, where union strikes led to retaliatory evictions and violent escalation, armed clashes breaking out between the miners and the private guards

employed by the companies. The history of United Mine Worker (UMW) organizing in southern West Virginia was slow and often unsuccessful in comparison, a pattern which some authors have sought to attribute to worker indifference. The theory goes that workers would have grudgingly accepted the dangers of the mines as the best of bad options, recognizing that the steady wages were a step up from the unpredictable economics of scrape-dirt farms or the discriminatory policies that barred minority groups from many other industries. The symbolic gestures towards company civility that cropped up along the New River would surely hearten those that support this view- a motorized incline eased the trip to the rim in one town, while film-screenings enlivened a camp elsewhere, and pay gradually came to mix real dollars and scrip. When the First World War broke out, managers at one New River mine sent care packages to their drafted employees to cheer them at Christmas.

Then again, the absence of open rebellion isn't the same as contentment. The alternative explanation for the UMW's struggle to gain a foothold in the anthracite fields veers in the opposite direction- in a town where companies openly opposed to unionization owned the houses, set the rent, and had the ear of local government, stepping out of line would have been an incredible risk. Public flourishes aside, there are indications that the companies of the New River Gorge did not vary too far from the typically harsh attitudes that allowed the region to provide some of the cheapest coal in the nation. A letter between management staff at the Kay Moor Mine, sited deep in the gorge, decries the costs incurred when workers took a day off to attend a funeral for one of their own, ending with the superintendent's admonition that "in no way will you consider shutting the mine down for burials." The same author took a disapproving attitude to having workers living on the upper edge of the gorge where access to other towns was easier, noting that "there is where we have most of our trouble in controlling the men."

Somewhere beyond the images of stable security on one hand and sinister pseudo-feudalism on the other lie specific stories, the particular details and site-dependent variations that separate economic history from lived experience. Unfortunately, relatively few written accounts are available from the miners' perspectives, and the geographically and socially insular nature of such communities might have discouraged true honesty anyway.

We cannot go back to verify history, and in so many cases there are no truly reliable witnesses.

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Ninety five years old, transformed from the wild girl who frequented honky-tonks to a twinkly-eyed lady with a penchant for crochet and Scrabble, my great-grandmother still had one last piece of hell to raise. She declared, at what some might consider the eleventh hour, that she did not want to be buried with Bud in the plot that has long been reserved for them to share. The reasoning for this change of plans is not a part of the story I know, and I only hear it second-hand, recounted by her children in tones of cautious skepticism. Dee Dee says that Bud was jealous and abusive, possessive beyond even the usual sexism of the era. The kids can validate only a small piece of this accusation, that he resisted allowing her to work outside the home even when the family was in serious need of money, his reluctance founded on the fear that she would flirt with other men. The rest boils down to ominous hints and unverifiable assertions, incidents that may have been muddled in the retelling.

Perhaps troubled times create effects that linger, diminishing gradually but still toxic enough to be carried down to the next generation. I can't help but wonder how much of her children's skepticism stems from a fear that Dee Dee's stories will retroactively damage the childhood they thought they had, the image of a family that was hardscrabble but essentially loving. No one is sure how good her memory is now, or even how good it was back then. Anecdotes tend to lose their substance when viewed through that many years and that much alcohol. Dee Dee never reached out for help at the time, but the

absence of open rebellion isn't the same as contentment. After all, in an era where the husband's right to rule the household was largely undisputed, stepping out of line could have been an incredible risk. Even in these relatively enlightened modern times, there is a persistent cultural undercurrent that badly behaved women deserve what they get. In a clannish small-town in mid-century Appalachia, the domestic troubles of a family who left the kids in the car while they drank at the local watering hole likely would have garnered more shame than sympathy.

Their children remember Dee Dee as the loud one, a drama queen, and Bud as more reserved, if only by comparison. Disciplining the children when they misbehaved was often done by the woman of the house, atypical for the time and trotted out as evidence of Dee Dee's forceful character, too strident to have played the role of victim. Someone volunteers a story about one of their fights that culminated with her barricading herself in the bedroom for the evening, Bud laying down across the doorway so that he would know the moment she relented, calling through the door to try to coax her back out. The story is told as if to say "look how patient, how forbearing," and without knowing for certain, I guess that's as viable an interpretation as anything else. Story is what you get when you run out of history. It would be just as easy to read Bud's gesture the opposite way, as a last-ditch effort to assert power through the solid barrier between them, an attempt to make sure that she didn't escape.

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Right now the landscape around the old mines appears peaceful. The trees are a thick ceiling of green overhead and everything is dappled with sunlight, softening the ragged edges of the remaining structures and the horizontal gash of the mine opening, itself now safely covered over with a metal lattice to keep curious trespassers at bay. It feels like a place that is reaching resolution, more a well-preserved tourist site than a recovering zone of environmental sacrifice. The path is clearly defined and well maintained, wooden stairs helping the more intrepid visitors test out the arduous trip all the way

from the river to the rim. A helpful sign warns against wandering, and this is where things begin to diverge, offering more than just the usual polite encouragement to preserve the native flora or prevent erosion.

No, the warning is more for the benefit of the pedestrians than the scenery. Blasting caps were stored in a distributed series of little huts around the area of the mine, buildings that looking something like dog houses half buried in the earth, separated into disparate caches in order to limit the explosive damage a stray spark could cause. Some are easily visible from the trail and would therefore be simple to avoid, but not all of the locations are certain. Elsewhere lies rusted metal from abandoned machinery or the bent frames of collapsed hauling carts, still sharp enough to punish the shins of the unwary even as they succumb to decay and twining vines.

There may even be more deeply hidden legacies, buried beneath the verdant surface. I don't know the specifics on this particular site, but old mines in general have a way of making themselves felt in the local environment long after they're shuttered and given back to the bats. Subsidence is one such, the ground gradually sagging as the roof of an abandoned mine loses its battle with gravity and the tunnels collapse below ground, damaging foundations and cracking walls up above. In 40 of the 55 counties in West Virginia mine subsidence coverage is an automatic part of every home insurance policy, the rule rather than the exception. Acid drainage is another common legacy of coal, and although the sulfide tainted, rust-colored water can be gradually rehabilitated through treatment with lime and other alkaline substances, it's a slow process to carry out over the estimated 2200 miles of waterways impacted in a state like West Virginia. Troubled times create effects that linger, diminishing gradually but still toxic enough to be carried down to future generations.

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On the way down into the gorge, we drive through a narrow cluster of buildings sheltered around the road, the kind of place that would have to be a one-horse town because there isn't enough flat ground for more to stand. Bud and Dee Dee lived here in Ansted for a while, when they were following the coal mine jobs.

This is another piece of the story I had missed, jogged loose by a familiar landmark. The only job that made much of an appearance in family stories was the mechanic position Bud habitually returned to at the Ford garage, and it somehow hadn't occurred to me that the same skills would be applicable for machinery other than cars. It turns out that the mines paid better, even if the work was worse and didn't last as long. That was in a transitional era, the old underground shafts starting into their long slow decline while drag lines began scraping out surface mines, the restrictive security of company towns giving way to more temporary and transient arrangements, encouraging families to live not in a single spot but spread across a circuit whose dimensions were defined by the coal seams. The other reason for the job-hopping was simply that the coal jobs were less enjoyable than fixing cars, unpleasant in ways that are never specified, so that Bud tended to quit as soon as he made enough money to go back to the garage. Again, details are lost, the story is incomplete. There's a bit of foundation here or a doorway there, but not enough to rebuild the missing towns.

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Over the years, Dee Dee has had an uneven relationship with religion, once attributing her longevity to the fact that God simply didn't want to deal with her. However, as many people do, she became more contemplative as age advanced, turning more fully towards the faith that had been her on-and-off companion. She even found a favorite verse of the bible, words that sound to me almost as ambiguously desperate as the second-hand stories of her early life:

“Though I walk in the midst of trouble, thou wilt revive me: thou shalt stretch forth thine hand against the wrath of mine enemies, and thy right hand shall save me. The Lord will perfect that which concerneth me: thy mercy, oh Lord, endureth forever: foresake not the work of thine hands.”

Story matters, slippery as it is. Which version of the past we come to believe holds lessons for the future. How much do we trust companies that offer stability in return for autonomy or trade false currency for real risk? At what point does faith in the power of nature to endure forever become a foolish refusal to face the damage done by the work of our hands? In the end, what do we say to those who are unreliable witnesses to their own past suffering, whose staggering feet have led them into the midst of trouble? We are forced to read between the lines, to fill in the gaps between black and white, writing the story for the victors or the underdogs, the powerful or the powerless.

Oil City

The last time I'd been to the museum at Oil City, it was a relatively staid place. Black and white photos, a scattering of old documents, and bottled oil samples filled the indoor displays in careful rows. Replicas of the early buildings and primitive drilling machinery dotted the grounds outdoors, marking the place where Edwin Drake first struck crude in 1859, after months of failed attempts and mounting frustration. It would have been impossible in those uncertain prospecting days to know what a few successful wells would set in motion- a race for resources that not only transformed the region but continued to grow from there, as demand and competition rapidly outstripped what a little corner of Pennsylvania could support. Even though the museum exhibits are clearly focused on that first boom, its only one end of a long historical trajectory, beginning in a world of rickety flywheel pumps, clapboard shacks and horse-drawn fire companies to end with a modern drilling industry capable of hopping borders, driving economic change and continually pushing new innovations in technology.

Alongside the museum property runs Oil Creek, a waterway with a sad story in its name. In the early oil boom days it was a primary means of transporting barrels of petroleum from relatively remote drilling sites to bigger towns where the crude could be processed and distributed, but the ride often proved too rough. Jouncing and jumbling on the current, the piles of barrels would come free from the ties meant to lash them to the deck and go bounding independently downstream, shattered long before they ever reached their destination. In fact the spills were such a regular occurrence that townspeople used to stand along the banks with blankets when a shipment was due, soaking up the free-floating oil and wringing it back into buckets to take home or resell. The old photographs show hillsides covered with derricks, hastily constructed buildings and not much else, the trees felled to feed a frenzy of building. Frequent fires and the occasional small explosion spelled disaster for the remaining vegetation, leaving slopes that look bleak and eroded even in time-blurred tintypes.

Since then the hills have become peacefully green again, rising in slow heaped ridges, many of them preserved in their forested state as parks or game lands. Oil Creek's name has been relegated to a historical novelty, an odd appellation for what is just another wandering stream. A happy ending all around. Yet, despite the evident damage caused by the early industry there is a rueful sense of pride about the past boom peeking through the tour guide's spiel. The notion that products from this very ground lit lamps from coast to coast and greased the churning machines of the industrial revolution still carries a certain thrill alongside the repentance. It is hard to look back and weigh the peace of ecological recovery against the short-lived high of being the focal point of so much successful innovation and unbridled ambition, a pinch-point in the flow of money, energy and power of all sorts.

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My second visit to the museum, only a few years later, is radically different. The old photos are relegated to the corners now, struggling to compete with the new installations of touch screens, flashing lights and interactive exhibits. The introductory video in particular is a wonder, narrated by cheerful cartoons in the shape of a drop of oil and a blue flame of natural gas, big smiles pasted on their fuel-faces. The history of the region rolls past in a rapid, upbeat key, including the bold assertion that oil saved the whales. In a limited historical sense this is accurate, since petroleum directly replaced whale oil as the lighting fuel of choice just when whale populations were hitting a dire point, but the flippant delivery still feels strange. The presentation winds down with a review of all the important roles oil and gas play in our daily lives, complete with zooming race cars, fashionable synthetic fabrics and hip plastic-encased electronics. The whole show comes into clearer focus when the sponsor logos run at the end, with a heavy proportion of modern drilling companies in the mix. Centuries after the original boom and bust, Oil City has found new patrons much like the old.

In reality, the changes at the museum are only one part of a larger pattern, an information onslaught that has paralleled the arrival of natural gas well-pads and pipelines in the region. There are commercials on the television, print ads in the newspapers and even a drilling-logoed banner that greets arrivals at the Pittsburgh airport. It's difficult to find exact numbers, but the promotional spending for the state is estimated to be in the millions, covering everything from big efforts like billboards to hyperlocal shows of support. One company even sent a representative to bid on cows at the county fair in an attempt to lock down some real rural credibility. The funds at Oil City haven't just gone to revamping the public exhibits but also improving the storage for all the less exciting documents tucked away in archives, and perhaps more importantly, getting the mobile education unit rolling. The unit in question is essentially a fancy trailer for taking a mixture of scientific and historic presentations around to the local schools, and it presents another point at which the ethics of this support get blurry. Funding education and historic preservation is a hard project to criticize, but when the subject matter is fundamentally similar to the industry putting up the cash the interaction between past and present becomes fraught.

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When it comes down to it, the time between Edwin Drake's momentous discovery and the decline of the early oil industry was depressingly short. The first successful well, drilled near Titusville in 1859, was followed by a steep learning curve fraught with unprepared amateurs and industrial accidents as production ran ahead of scientific knowledge. Undaunted by these difficulties, towns increased their populations by orders of magnitude virtually overnight, swelling with hastily built hotels and temporary residents, new ironworks, refineries and railroads flourishing alongside gamblers, speculators and wildcatters.

Yet by roughly 1900 a combination of industry consolidation and wildly fluctuating oil prices had driven most of the drillers either out of the area or out of business altogether. At one point the sudden flood of new product into the market had driven oil prices down to a mere 10 cents a barrel, and industry giants like Standard Oil waited to gobble up small producers who couldn't weather the lows. The oil that was reachable with the era's basic technology turned out to be a relatively shallow, narrow band, and soon the volume fell below a level that could justify infrastructure investments. From producing over half of the nations' oil during its peak years, by 1907 Pennsylvania's oil fields represented less than 10% of the national market, losing out to western states with more accessible reserves.

In that context, it's hard to find much to be proud of in this narrative. Whatever reflected glory can be had from the days when the world looked to this patch of dark-seeping earth, it has left relatively little of tangible value behind. The towns around the oil region today are much the same as other quiet post-industrial towns, just augmented with some Victorian houses once belonging to the oil barons, palatial but largely empty. Most of the buildings used by the long-ago workers have not been preserved at all, fallen or burnt down to an occasional stone foundations with a historic plaque to give the rubble context.

It's tempting to hold this up against the current drilling renaissance, searching for the parallels and points of divergence. The modern innovations of hydraulic fracturing and horizontal drilling have allowed access to pools of resources that were never economically viable before, and the entrance of these "new" reserves spurred a rate of leasing and drilling over the first few years of the boom that would have made the old prospectors proud. Imaging technology allows the modern industry to avoid many of the missteps previously caused by geologic inexactitude, but a handful of headline-grabbing leaks have raised the possibility of flaws still remaining in the system.

In fact, the combination of rapid expansion and lagging knowledge may be just as perilous in the modern era as it was years ago, albeit in new and unconventional ways. For example, municipal water treatment plants were recipients of large volumes of flowback in the first days of the drilling rush, before wastewater recycling became a priority. Not equipped for the industrial quantities and unique chemical compounds produced by the wells, these facilities understandably struggled, a fact that was only discovered after the incompletely processed wastewater was discharged back into local waterways. Much like the older boom, the modern influx of new activity has also contributed some unexpected societal side-effects, including a marked increase in traffic accidents and damage to local roads caused by the sudden jump in heavy truck traffic.

Just recently, a vertiginous drop in fuel prices has left purchased leases sitting untapped, with landowners who were counting on their percentage of the well revenues left in the lurch. One key cause remains much the same as it was in Edwin Drake's day, despite now being situated in a new international context- a glut of product hitting the market upended the normal balance of supply and demand. The overall pool of resources in question are much larger than Edwin Drake's original shallow band of fuel, but with the industry now tied to a global network of commodity trading, that is no guarantee of prolonged stability. Natural gas may be touted as the clean-ish fossil fuel for the future, but the sweeping day-to-day fluctuations in the market still raise the specter of boom and bust cycles familiar from the past. In the end, I don't know what rhetorical flourish or advertising campaign could be taken as a sufficient promise of commitment. It's difficult to imagine any goodwill gesture or community project offering prosperity reliable enough to make up for the inevitable risks of another round of resource development.

We can try to reach back and pull a different set of lessons from the old days, to swap out the images of barren hills and oily streams for something with a little more flair and optimism. Only time will tell whether those old patterns can really be changed, or whether we will simply see them played out

again, greater advantages in technology and mobility accelerating the newest fever for industry and energy. Perhaps someday visitors will come to another version of this museum to gawk at the remnants of pipelines and model drill rigs, shake their head over photos of the huge wastewater impoundments and samples of flowback carefully labeled to indicate the levels of acidity, salinity and chemical content. Maybe the guides will still vacillate between repentance and pride as they enumerate all the reasons that *this* boom should have been different, the one that finally delivered on its promises of an economic revitalization that outweighed the environmental losses. Then they could finish the outdoor tour by pointing to healing hills where a different set of scars tells the same old story.

Wild Ones

Everyone likes a story about a bad dog. Some laugh along at others' misfortune and some cringe in sympathy at the memory of their own mishaps, but the fascination for four-legged faux-pas seems be just about undeniable. Overall it's a puzzling phenomenon, because far fewer people actually like living with a bad dog. There's the smell of skunk persistently embedded in carpets and clothing, lingering until scent receptors shut down in defeat. The shoulder viciously wrenched in a struggle for control of the leash is a classic, followed by the friction-burnt palm as your grip finally fails. That doesn't even begin to cover the undignified shouting in public, the regular spattering of mud, and the gag reflex struggle brought on by a bad-dog's very loose definition of what is edible. I've never missed any of these things, the frustration, stress and the sense of absurd powerlessness. Except, of course I have.

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All the guides and breed handbooks said that poodles were *good* dogs- intelligent, friendly and eager to please. Rusty was what is officially known as a standard poodle, which in practice means a rangy, fuzzy dog that looks something like a retriever with a bad perm. Genetics can only tell you so much though. More accurately, he was a menace. He caught groundhogs and carried them endlessly, too proud to let his prize go even after it stopped struggling. Skunks were tossed sky high while they sprayed in panic, producing a smell he seemed to actively seek out, sometimes racking up multiple victims a month. At least once he had to be hauled off the back of an adorable spotted fawn surprised in its bed, and in an act of profoundly inaccurate confidence he once treed a bobcat.

These kind of events aren't really charming or benevolently rascally in the way that we like to think of misbehaving pets. Even in retrospect it takes real effort to pick the endearing aspects out of the mess and manic chase scenes. In the moment, there is an unpleasant shock to this sudden outburst of violence, a cognitive dissonance to seeing a usually affectionate companion animal engaged in minor

bloodshed. The illusion at the root of keeping pets is that we have controlled the animals in question, changing not just the personality of a particular individual but the physiology and underlying behavioral traits of an entire species. Dogs are meant to have been slowly altered to the point that they constitute a new kind of creature, man-made beasts that have broken away from their wild ancestral roots. No one likes to catch a glimpse of the ur-canid hanging on behind the friendly veneer of a wagging tail and big puppy-dog eyes, still circling the cave man's campfire somewhere between friend and foe.

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Although not too extreme in most ways, the worst of Rusty's escapades for sheer personal embarrassment was probably the duck. At one time we had a next-door neighbor with a landscaping fetish, a man who had moved from the city in search of bucolic tranquility but now refused to make his peace with the unruliness of a rural landscape. Automatic lights on decorative poles lined the paved drive alongside miniature lion statues and neatly trimmed shrubs, all presiding over short-clipped grass where no dandelion dared to show its face. The little bit of forest that still bordered his land was kept at bay with a fastidious line of fencing, both an extra layer of decoration and a tangible way of drawing a line between the carefully managed land within and the unpredictable outside world. A few ducks paddled around on an excavated ornamental pond near the road, flightless store-bought birds who had been gifted with their own little house and a set of automatic lights, residents in a miniature version of the larger landscaping project. I was never quite sure why animals would need all that infrastructure, but figured it must be some side-effect of their extreme domestication. Maybe properly civilized ducks just can't handle the depth of a really dark night.

You can probably guess what comes next.

I come walking the dog past their yard and lose control of the leash as he makes a breakaway dash through the thin border of trees that screens the road. The dog is sprinting and I am sprinting, breathing too hard to even yell, the neat line of lawn ornaments turning to a blur in my peripheral vision. The leash is trailing out behind Rusty like a comet's tail, and in the woods he would have gotten tangled up by now, slowed by undergrowth and stuck on branches. There's not much for it to snag on in the flat grass of the lawn though, and my last desperate lunge for the handle is a pathetic miss.

The ducks are on the move, shuffling frantically towards the pond, but their stubby legs aren't made for desperate escapes, and they just aren't covering the distance fast enough. The dog is closing in, hitting the edge of the artificial pond midstride with a confident splash. Ducks are honking in outrage, making pathetic little flapping motions with their clipped wings that get them nowhere. Slowed down by the resistance of wading now, the dog makes one last long bound and grabs a straggler, while the rest of the flock retreat to the middle of the pond, traumatized survivors huddling together for safety. There's nothing more for me to do now, so I stomp around the edge of the pond as the dog returns dripping, mouth locked around the vulnerable arc of the bird's neck, still shaking its limp glossy form.

The next time I see our neighbor he complains that some vicious predator must have carried off one of his pond-dwelling pets. I nod with a vague expression of sympathy, but by then there's beginning to be something funny about the whole unfortunate episode. He had drawn the borders, dug out the ground, seeded the plants he wanted and killed the ones he didn't, built the little house and lit up the night with a glow visible even from the other side of the scrub forest that separated our properties. Through significant effort and expense the neighbor had managed to create a bastion of all things safe, sanitized and vaguely synthetic. It still wasn't enough to keep the wild world at bay.

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I think there must be a secret reassurance in the presence of a bad dog. Sometimes humans set out to civilize only to realize that our improvements have stripped away the excitement along with the difficulty, that in smoothing and paving the road of life some intangible but necessary zest has been lost. Perhaps something is regained with the introduction of that limited dose of chaos, the intrusion of instinct and unpredictable impulse into an orderly life where the dirt and tangle of the natural world can otherwise be kept to the opposite side of a fence. Even as we shout and curse, there may be a part of us that is better for the mud and the blood, the defiance and disruption, a supposedly tame animal's capacity to blithely disregard our wishes and instead follow the more basic rules of biology, predator and prey.

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Nobody likes a dead dog story, so I'll skip that part, skim past the spraddle-legged staggering and incipient canine senility. We got a new dog this summer, a runty rescued mutt with a bad past, so entirely shy that she would barely even play, flinching from a thrown Frisbee like it was incoming missile. Surely, here was evidence of how much mankind can alter a living thing, willful wildness stamped out by some unknown form of human unkindness. No more bad dog stories, I figured, as the new scaredy-dog followed me around the house, afraid of being alone and afraid to get too close, always gauging the distance for minimal harm.

At night I go out with the dog and a flashlight, not sure whether it's the protection of the wavering beam or just my company that she thinks is guaranteeing her safety in the humming, scurrying world of summer night. I lose sight of her as she makes a detour born of unusual bravery, a stubby brown dog swallowed by a tall tangle of uncut grass and wild tiger lilies as she ventures up the bank. A weird squeaking noise follows and I head towards it, fearing that even in these few minutes she has managed to get herself into some kind of trouble. A nest of rabbits was hidden in the underbrush, and

now half-grown bunnies are scattering in all directions, zig-zagging desperately as they try to make their escape. All signs of shyness are suddenly gone, the little dog wheeling and juking frantically, trying to keep an eye on all of the prizes at once, mouth open in something between a grin and a snarl. She rears up in a long spring, bowing her body like a coyote in a nature documentary, then comes down with all her weight behind her front paws, stomping a baby rabbit into the ground. Squeak.

This is the sudden shift, the visceral reminder that regardless of whose name is on the paperwork or what hateful stranger has left an imprint on her past, this is still an independent creature, whose ways I can neither control nor ever fully comprehend. For all the dramatic changes in character wrought by man, from selective breeding to trained behaviors, there is a hint of something ancient and alien in a dog at chase, an indifferent wild force that is remote to human experience in ways both unsettling and invigorating. I spend a significant piece of the evening going in circles out in the muggy rustling darkness, trying to coax the dog back inside without introducing a bleeding rabbit corpse to tan carpet. I don't succeed, and frustration wars with a secret relief at this little instance of natural rebellion. The bad dog stories aren't over yet.

Taking it Home

There's a game I play when writing essays, and sometimes when reading them. I try to imagine who I could tell this story to, and at what point they would tune out, pinpointing the place on the page where the conversation would give way to outrage and communication breakdown. I start at the easy end of the spectrum with my parents, straight-ticket democrats who take out the recyclables every week and write a check to the local conservation club at Christmas. Easy enough to get their endorsement for a cautionary pop-science piece or an ode to some obscure but beloved species. What about conservative extended family members, though, the ones who are adamant about keeping Christ in Christmas and genuinely don't understand why climate protesters are allowed to *drive* to a rally? What about holdover libertarian friends from high school who spend their weekends out in tree-stands and have actually read Ayn Rand voluntarily? None of these are people who don't care about nature. I've been hiking with some and seen their affection for it, heard others reminisce about favorite places in the great outdoors. Yet I don't know that I could sell many of them on the virtues of a typical environmentalist text.

I feel the need to imagine these other readers' reactions, because it's easy to write only for the people you see, and for the past few years the closed world of class and campus is pretty much what I know. The trouble with that isn't so much what people say as how they say it. There is an easy security in knowing you're surrounded by like-minded people, a comfortable blanket expectation that everyone will nod their heads thoughtfully at digressions on the diseased heart of capitalism, the shortsightedness of mere national patriotism, or the insidious dangers of cheap subsidized food. I understand that there is serious reasoning and rationale for statements like this, and can even get past the jarring first impression to agree with much of it. But it's hard still, to imagine going home and spreading the good word to the neighbors that their prized office job is morally bankrupt, or asking the high school to

rethink their morning pledge of allegiance. Who really wants to accuse the folks counting out their change at the dollar store of being complicit in the dominance of corporate corn?

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The cultural divide is illusory, and then again it's also real. Illusory, in the sense that the stereotypes of egg-headed universities and salt-of-the-earth rural towns hide a thousand variations and shades of grey, split-ticket voters and non-conformists of all stripes. Real, in that the concept has entered popular and political discourse, a binary force that can trip you up whether you agree with it or not. Pew Research Center polling on partisanship shows that the divide between self-identified conservatives and liberals is bigger now than it's been in over twenty years, and attitudes towards the opposition have worsened accordingly, with an increasing proportion of people viewing the other side as not just mistaken but a threat to the nation's wellbeing.

Of course, I could opt out of that difficult conversation altogether, form connections primarily amongst like-minded individuals, end up with a circle of support staunch in their organic produce and bike commuting. I could sigh and shake my head over the fact that some people just won't be reached, and accept being taken off the Christmas card list as an unfortunate casualty of the culture wars.

But sooner or later, I would have to live with my neighbors, my family, my old friends. Sooner or later, I would have to go home.

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I've been watching the news from home closely. The recycling plant in town caught fire again, for the third time in the past five years, and this time was worse than usual. A dozen fire companies were called out, while the smoke rose skyward and everything nearby started to reek of burnt plastic. Then the state Department of Environmental Protection (DEP) was called in when it turned out that

used batteries had caught fire, rendering the flames difficult to extinguish by traditional means and adding trace amounts of burning zinc to the airborne mess.

As pollutants go, zinc and the zinc oxides that form when it is heated are not headline grabbers- few people outside the metallurgical industries are directly exposed, and they aren't a known carcinogen. Still, zinc makes the EPA's list of 129 priority pollutants and, perhaps more to the point in this situation, just about anything can become an irritant if you burn it. On the Pittsburgh-area Breathe Project's online air quality map, a red blob labeled "unhealthy" showed up around town. Drive one way up the road from the plant and you pass a bar, a grocery and a hardware store, all small locally-owned establishments. Drive the other way and there are houses, a daycare, an orthodox church and a laundromat. People were told to stay inside and keep the windows shut, but that's about all that they could do to create some degree of safety.

Maybe this is where common ground starts, specific, tangible stories from right where you live. My mother works in the hardware store right up the street, and because business went on all day with the doors swinging, they couldn't even try to seal the smoke out. Her voice sounded hoarse when I called on the phone. People complained of sore throats all that day and for a few days after, checking into the doctor's office with variations on the theme of respiratory discomfort, but the full results of the DEP investigation may not be forthcoming for months. Even with the risks of industry so apparent I wouldn't go back and ask anyone about their place in the moral economy or the structures of corporate hegemony. I'm not sure how far I'd get with some of the rhetoric of climate change, with its tendency towards stark ecological guilt and visions of radical cultural reorientation. Maybe though, I could ask how much ash it takes to be able to say that we're still a factory town, how much smoke we're willing to breathe for union pay and overtime.

I don't mean this question facetiously, or as a way to make some grand moral point. As big as dreams can get, I don't expect that I'll see a world where, metaphorically, nothing ever burns. This is a recycling plant after all, a theoretically environmentally friendly facility meant to keep useful materials out of the landfill, albeit one that clearly has some problems to work out. As unfortunate as the whole experience has been, it doesn't fit neatly into a story about polluters versus the people, good small town against big bad company.

When I ask "how much?" I mean that literally, an entry to the much more difficult work of setting livable boundaries, of entering the worrying gray zone between the status quo of business without limits and an ideological dream of a world without harm. It's a conversation that is likely to be comfortable for no one, requiring new narratives richer in nuance and complexity than those that have come before, a rhetoric that can be taken home.

This is not to say that every search for solutions has to mean navigating a minefield of cultural and ideological division. Sometimes the in-between spaces evolve on their own, slipping quietly past the binary boundaries with an easygoing appeal and a healthy dose of luck. Back home, one of the periodic efforts at downtown revitalization has left a gap in the buildings along the main drag, a dilapidated old store front levelled on the community dime to make way for new and better offerings. Nothing has been built there since. No offers were made, no private business seemed to want to take the risk of moving into the site of so many previous failures. Instead, on a summer morning, the sound of music and voices now spills out from that space, an open community plaza connecting the streets, drawing passers-by to the clusters of flowers and little benches set in the sun. The farmers' market spills from the plaza into the adjacent parking lot, a hodge-podge of tents, folding tables and hand-lettered signs adding their own brightness to the scene.

The established farmers who have driven in from the surrounding countryside set out battered crates filled with endearingly asymmetric produce on the tailgates of their pickups, parked alongside tables sporting fussily arranged displays of scented soaps or hand-knitted scarves made of fuzzy alpaca wool, a newer wave of vendors tinkering with the familiar format. An ex-punk with a face full of metal and an impressive collection of tattoos attempts to wrangle his young son away from the tables laden with baked goods, as the elderly ladies clustered on the nearby benches chuckle indulgently over the donut-related tantrum. The Amish vendors seem to occupy their own island at first, regarding the goings-on stoically from beneath their wide-brimmed hats, but eventually give in to the conversational overtures of the man selling cuts of beef out of a dubious-looking trailer. Even in a town that isn't too diverse on paper, the maintenance of a common space depends on mustering enough tolerance and goodwill to accept the neighbors and their potentially divergent reasons for attendance.

Conversations at the market have a half-heard quality, exchanges muddled by the reverb-heavy oldies being churned out by the live band, but it's still fairly clear that no one is spending their time calculating reductions in food miles or fussing over the relative size of carbon footprints. I can discern no contemplation of controlling the means of production or the radical nature of creating a space for local exchange outside of the web of the global economy.

That's alright for today. People who would undoubtedly flee from such philosophical considerations are enacting them anyway, driven by their own particular motivations, anything from loyalty to the locals and a sense of tradition to quality considerations and a yen for cheap tomatoes. All the little positive changes being wrought beneath the surface of a day of summer sunshine may not be much enhanced by the sudden imposition of a particular and political brand of environmental terminology.

After all, there will be plenty of opportunities for wading into difficult conversations in the days to come. The coal plant to the west has proposed a conversion to natural gas, trading a known air quality hazard for a controversial fuel whose risks are still being discovered, and a potential new ethane cracker facility in the next county promises to double down on the divisiveness. Pipeline politics and opposition to eminent domain may create temporary alliances between property rights militants and environmentalists, but there's still little consensus on what projects or industries this region *should* depend on.

At a time when the search for consensus seems simultaneously more urgent and more difficult than ever, getting down to the everyday experiences that lie behind the ideology may be a necessity. Keeping the story at the market simple- good food, good neighbors, and an empty space in the community finally filled- might make it that much easier to take home.

Bluegrass Ecology

I suspect few people would intuitively identify bluegrass as an environmental art form. Even interpreting the term broadly, acknowledging the wide areas of overlap with traditional strains of country or the periodic revivals of Americana-style music, it has too much of a cornball reputation to be associated with such a seemingly modern and progressive movement. Surely a genre that so enjoys talking about the simple good old days and comes wafting out of pickup trucks on static-y radio stations will have little to contribute to a conversation about the earth's complex and increasingly endangered ecosystems. After all, it's still easy to find a number of anachronistic and embarrassing references in this style of music, the kind of cringe-inducing moonshine and shotgun tropes that would be better relegated to the dustbin of regional history.

Yet, few other genres are as needlessly, endearingly geographically specific. It isn't enough to simply set a song somewhere in the countryside, when you could open with the declaration that "my heart is a Blue Ridge Mountain" or better yet stake out lyrical space in some particular hollow, names so lovingly localized they may not even appear on official maps. With enough time and the right CD collection you could chart the place names ranging around the lumpy line of the Appalachians, sort out songs so as to find all the ones with a particular county, mountain or river in common.

There's little cultural cachet to be gained by throwing in the name of a familiar valley or favored water-crossing. The size of the audience likely to hone in on the reference is almost comically small. And, in a way, that's precisely the point. It's an expression of a kind of intense provincial pride for places that no one else really gives a damn about, insisting on their importance by singing them over and over, as if a hummable melody is enough to stake out a spot in the cultural record. I can't remember where Butcher Holler is, and it might take me a while to pick out Muhlenburg County on a map, but I do know

the names, the way they fit into the shape of a lyric and the sketched outline of a story. I know that for someone these places carried enough meaning to be worth raising up in song.

Geographic roots are more than just a litany of place names, of course. The characteristics of the local environment serve as another affirmation of location. The sound of wind in the pines is there, tall oaks and the bent-backed shape of an ironwood tree. Willows trail their branches along cold streams, and leafless maples wait out the winter. Asters and wild geraniums open their blossoms in the morning and falling stars crease the sky at night. Rivers roll through the choruses, from the Green and the Big Sandy to the Cumberland and the New, divided by dams and spanned by bridges but still a potent touchstone despite their constraints. The profile of green rolling hills inspires nostalgia, and the shade of hollows can either comfort with its enfolding coolness or evoke a melancholy world where the hopeful sun feels faint and distant. One ballad describes a ridgetop farm as possessing soil "the color of the blood in me," an image which is questionable in accuracy but persuasive in its sentimental sense of home.

A fixation on home and place-loyalty pervades many of the lyrics, somehow never stronger than when the speaker is far away, longing for a place that is perhaps better preserved and more perfect in memory than it ever was in life. Many of the older song titles are simply variations on the theme of return, articulating a deep need to regain the familiar landscape of a "peaceful little mountain home" that may be easier to express in music than it would be in plain speech. Although there are some songs that are quick-stepping and playful, many others carry too much of that keen sense of nostalgia and longing to truly be easy listening, a high lonesome aesthetic that can either strike deeply or simply be painful on the ear.

It is not only the fascination with a particular physical geography that gives the genre some environmental credentials, however, although that is becoming more unique as music becomes

increasingly globalized and digitally rootless. It is also the recorded history of resource depletion and landscape change. Just for songs pertaining to the mining industry, a whole play list would be easy to devise. You could start with more ambiguous old tunes like “Coal Tattoo” perhaps, with its strange love-hate relationship to the work of extraction, before moving on to the unleavened mournfulness of “Black Flowers” or “Never Leave Harlan Alive.” The endurance of “The Mountain” would fit right in, or the more distant ache of “Paradise,” written for a generation at a degree of remove from the original damage. The details are often drawn from a unique perspective of intimacy, stories of people who are closely dependent on both the land and an industry that is slowly destroying it, a position where the choice doesn’t seem to be between right and wrong so much as between different forms of loss.

The tone raises a serious problem, however. These are by and large not songs of resistance. As a genre neither bluegrass nor its close musical relatives have quite mastered the sense of screw-this rebellion that are integral to the hipper more urbane worlds of rock and roll or rap. Perhaps it is something in the loyalty to more traditional styles of playing and mannered eras of songwriting, too restrained to give way to full on anger. Maybe the strong religious strain, with its imprecations to trust in the redemption of heaven and the fact that “god makes no mistakes,” saps some of the confrontational impulse, waiting for justice to arrive in a manner more spiritual than political. It seems likely that a canon whose best attempts at topical commentary are still shaded in tones of patient forbearance can only be of limited use for affecting the larger world. It may help people to get through the day with some sense of dignity, hearing stories of poverty and persistence given serious artistic consideration, but that doesn’t necessarily mean it will bridge the long last step to actual change.

Perhaps for this reason, it’s been only relatively recently that I’ve been convinced to take this kind of music seriously. There’s something about the entire teenage life phase that gravitates to loud, marginally coherent music and unfortunate choices in hair dye, an abstract and half-formed conviction that you should be in some way sticking it to the man. I absolutely wasn’t, but that’s beside the point.

There was something so stodgy about spotting a fiddle player sawing their way through reels at the local arts festival, or worse yet, an amateur dance troupe clogging with stiff-backed seriousness, rattling the makeshift stage with their slightly off kilter stamping. Happy to learn about the traditional cultures of other peoples and regions, I was more likely to wince at the ones right down the road.

In the end I'm not sure what brought me around, unless it was the unique charm of songs that were in touch with particular places, existing not in some anonymous built environment but in specific details of the natural world, the familiar curve of a hillside and the sound of a mourning dove's cry. I'm even beginning to wonder if there may be a certain quiet protest hidden there after all, in the commitment to remember and retell, the willingness to witness and remind the world in some small sense of places that are easily forgotten. Even in the most reverent of reproductions, music is not a fossil, a mere fixed record of the styles and lyric preoccupations that came before. Any musical genre left at large in the world will eventually take on a life of its own, subtly evolving in its passage between individuals and across generations, melodies adapting to fit new circumstances that may call for more than just the old tones of mourning and perseverance.

There are even occasional stories that raise the prospect of something more strident, a direct and tangible link between music and action. A trio of protests in 2008 targeted banks that invest their clients' money in coal shares, marchers sharing the spotlight with a traditional string band that lent a defiantly festive air to the dire matter of mountain top removal. Some of the old song names have been appropriated to lend their weight to environmental blogs and sites, and photos of informal meetings for regional groups like Mountain Justice show members cradling guitars, mandolins and banjos.

This is not just a coincidental connection, a chance conversion of hobbies and social agenda. In areas where anyone calling themselves an environmentalist is liable to face a hearty dose of skepticism, picking up a favored pastime is an unspoken way of showing that you've got your feet on the ground.

The image of activists as interlopers, out of touch and out of step with local values, has been leveraged by extractive industry for a century or better, starting as a way of sowing distrust for union organizers and evolving into the go-to rhetorical strategy for dismissing the efforts of modern tree-huggers.

Even some critics of coal have bought into the stereotype, taking time out from decrying the depredations of the companies to criticize organizers who basically share the same concerns, depicting any environmental organization that shows signs of outsider character as “shoving *their* messages down everyone’s throat.” While it’s certainly possible that advocates from out of town have struck the wrong tone before, coming across as too strident in their positions or too proud of their own expertise, the general shouts of "go home" that often greet anti-coal picketers don’t seem like a commentary on individual missteps. Rather, they express the troubling assumption that those who don’t fit with the typical local accent and appearance forfeit their right to have a say, and worse yet, that protest has a fundamentally foreign quality, as if any act of resistance automatically carries the baggage of Berkeley and Birkenstocks.

Embracing a familiar cultural marker like music is therefore one way for groups made up of a mix of locals and newcomers to prove that they have made the effort to understand the areas where they work and adapt their strategies to the circumstances, a small gesture of downhome conciliation in days when efforts to protect the atmosphere and human health are referred to without irony as an act of war on coal country. This bid to bolster credibility isn’t limited to music, of course. It’s no coincidence that the activists of Radical Action for Mountain People's Survival prefer to go by the acronym RAMPS, evoking memories of digging for pungent spring onions on hillsides still unmarred by mining rather than focusing on the unfamiliar realm of sit-ins and civil disobedience.

Nor must this process only run in one direction, advocacy always called upon to adapt to local custom. “Stay in the company’s way" says a character in the Appalachian novel *Strange as This Weather*

has Been, "that's the only language they hear... 'Listen here,' it says, 'we exist'." Useful advice, perhaps, but the physical act of staying put is far from the only language available for reaching the public.

The emotional resonance of music, working on a level almost deeper than conscious thought, has a power of its own. New light cast by modern framings of ecological relationships and environmental justice may help show that the old idioms of song and story already contained a nascent activist awareness. By placing cultures dismissed as backwards and landscapes written off as lost squarely at its heart, bluegrass makes that simple and fundamental assertion- "we exist"- with every plucked string and skirling chord. It demonstrates that passion for place can be as natural as the swell of a well-loved chorus and fundamental as the ancient ocean bedrock beneath the hills, not a radical notion imported from distant cities but something that has been there all along if you know how to listen.

Theft

I knew a guy who robbed a bank once. Of course, nobody knew what he had done at the time. He was just another kid working barely above minimum wage at the local hardware store, living with his parents because he couldn't get out from under the student debt accrued in an incomplete degree. It's not an uplifting backstory, but not an unusual one either. The chit-chat at work, fit in between waiting on customers and updating SKUs, tended to revolve around things people wished they could afford and were afraid they wouldn't be able to. New clothes for growing kids fell into that category, as did medicine for an epileptic dog, repair work for a battered car, or even the month's rent for some. You learned to be careful around people who came in coasting on caffeine fumes, nerves ragged from pulling back to back shifts in two different jobs. Sometimes he came into work hungover from the night before, because drinking was the cheapest thrill available in a town where nothing much seemed to happen.

I was only at work now and then, a temp job that I got mostly because my mother already worked there, making me an adoptive member of what she refers to with both fondness and frustration as her "work family". I wouldn't say it was a great job exactly, even though my paperwork-wrangling role had to have been more peaceful than a day of selling repair kits and lugging rented equipment out to customers' cars. Not an official employee, I was constantly borrowing someone else's password to get access to the computers, and it's funny the way that little details stick in the memory. I still recall that the bank robber's password was "Prometheus", the ill-fated titan who first took fire from the Greek gods.

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Everywhere has its particular myths, not official doctrine but almost universally known, stories that pass into collective consciousness so smoothly you never even need to hear them told. Once upon a

time, you didn't need to go to college. The factory would hire you right out of high school, provide whatever cursory training you needed, then pay you fair union wages for your work. Although you might stay on the factory floor for years, the possibility of promotion was waiting somewhere over the horizon for the diligent, a desk job or a supervisor position to help you ease off your feet in the later days. Once upon a time, work meant that you had health insurance and a little money put towards a pension each month, building the future you wanted as slowly and surely as anything else pieced together on an assembly line.

People could afford to keep their cookie-cutter factory houses neatly turned out, and drive the sturdy American cars manufactured just a couple states over. The stores downtown had lights in the windows and there were crowds out on the sidewalk on the weekends, families toting their shopping bags down the main avenue. At the root of this myth is the idea that being an American worker meant that you were valued. The world wanted you and others like you to succeed, to have not just enough to live but a margin to keep you safe, insulated from the minor disasters life has to offer.

Maybe that world never really existed. I wasn't there to see it. Maybe the past always looks better than the present, filtered through old photographs and handed down recollections. The historical society downtown has samples of metalwork alongside the dusty old photos, whole displays of pipes and barbed wire racked up in glass cases. They look out of place there, too recent and industrial to be proper historical artifacts. Yet since most of the factories that made them are now closed, they have become instant relics, products from a world that resembles ours in most respects but no longer keeps the reassuring old promises.

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When I picture fire being stolen from the gods I no longer picture it as a single flame, a delicate flicker cupped in a hand. Now, I imagine sparks spraying from an arc welder, molten steel poured into

forms at the forge, grey banners of smoke streaming from factory pipes. It is all the things that granted prosperity but were never destined to last, dug up from a dwindling supply, processed and churned out according to a belief that uniformity and efficiency could be alchemized to give you prosperity and security. I guess it can, but only for so long. The proximal problem was outsourcing, the mobility of capital, the disloyalty of companies that used to trumpet "made in the USA" on everything from stickers to billboards. Even without that betrayal though, how long would we have been able to keep up our rate of theft? How many years of a rapid-fire process, digging, burning, smelting, shaping? Sooner or later thieves always gets caught.

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The bank that got robbed is out on the edge of town, by the little strip mall with all the dollar stores, signs in the windows discreetly announcing their willingness to accept food stamps. The dollar stores are one of the few places that always seem to be doing good business, thriving even as some of the home-grown shops close down. The bank itself has changed names several times that I can remember, bigger companies gobbling up smaller ones like too many fish in a pond, arcane financial maneuvers that no customer understands or can influence.

For many people the world seemed more comprehensible when it was centered on physical things- products shaped and built, cash and the occasional check in exchange, a system stabilized by its firm anchoring in the things you could see and touch. All the job listings in the paper now are for service jobs working check-out lanes and waiting tables, cleaning houses and doing home aid work for an aging population. The money is increasingly digital, transformed into flickering ones and zeroes on a screen or sparks racing through long-distance wires. There may not be anything wrong with this transition towards abstraction, but the fact remains that change doesn't come easy, particularly when it comes fast.

One of the unintended consequences of the factory years, of the frenzy for making and the tendency to invest both community wellbeing and personal self-worth in the power of production, was greenhouse gas emissions. It's a lesson that is only now coming home, and will continue to become more real for years to come. Its effects may still be felt in days when the notion of living around the rhythm of shift changes and the clamor of machinery is a historical oddity instead of a fresh absence, when the baronial names of Frick, Carnegie and Rockefeller have lost their cachet to newer titans.

The decline of American manufacturing, as miserable as it has been for many people, has therefore had one redeeming feature. As the factories folded, the power they demanded and the pollutants they discharged decreased in parallel, putting a dent in our truly impressive national contributions to climate change. Of course, that reduction on its own is not enough to turn the tide, and some of the changes of this globe-spanning phenomenon are already in motion. The long years committed to power and productivity have also committed us to a certain amount of upheaval, and the collateral damage that comes along with it. The problem is not so much change itself, which is fairly inevitable in a natural system, as the pace of alteration. Change doesn't come easy, especially when it comes fast, and in this case that may mean a cascade of consequences that many species are ill-prepared to adapt to.

The rustbelt struggles with the modern service economy, bowed under the weight of habits and expectations that the jobs available no longer support and seeking a new self-definition separated from being a workshop for the world. Animals scramble for a farther north or a higher mountain as the temperatures rise, hardwired instincts and physiological adaptations that served them in the past suddenly no longer an advantage in the Anthropocene world. Victims of two different trends, locked in an unfortunate parallel.

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It is not just the pace though, not always a matter of simply adapting fast enough to keep up with the changes, even if everyone were capable of that feat. The disruption of predictable patterns has a destabilizing effect that's hard to explain. The world feels subtly less safe when the stages of life don't move in the same gentle way they used to. This year gave us rainstorms and snowless green lawns through December, a crop of tough late kale picked out of the garden while the Christmas decorations were up. A bear was spotted rumbling through the woods long past its usual hibernatory bedtime and the bugs enjoyed an extra cycle of humming nuisance, rattling against the windowpanes where snowflakes should have been sticking.

What seemed to be a natural progression of life from school to factory and up through the ranks has been interrupted, old patterns no longer available to follow. One of the few small manufacturing facilities remaining in town announced major layoffs this fall, and the news was mourned like a death in the family. It has to affect people's minds, when things everyone thought they knew are suddenly no longer certain. Once you watch the crumbling of one underpinning assumption perhaps you begin to question others, feeling the world shift underneath your feet, an unsteady volatility that could saturate your thinking. Maybe people make rash decisions under the circumstances, take risks they never should have.

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The newspaper accounts say that after driving away from the bank, the robber went down to the creek, not far from where it flows across the road below my house. He was mostly there to throw away the empty gun he had used as a threatening prop, but I like to think that there was also something visceral about coming down to the streamside, an instinctive tie between swift water and the need for absolution, the possibility that the current might yet be strong enough to carry away the worst sins of the past. He may well have been feeling bad already, the doubts and fears rushing in as soon as the

adrenaline faded. From what I've heard he got caught not because of any slip-ups or profligate spending but simply because he acted too guilty, going around issuing unexplained apologies to loved ones, saying that they wouldn't want to be around him if they knew what he'd done. Drop hints that broad and it's only a matter of time, trading the uncertainty of possible trouble for the rock-bottom relief of knowing that the worst has already happened.

The creek is almost as wide as a river down at that spot, big enough for fly-fishers and kayakers in the summer, ducks bobbing in the current, long-legged wading birds stalking in the shallows. When you stand on the bridge the rush of wind and water blend together, an uneven rising-falling rhythm. Although the long bends put its length out of sight, I know that from there it flows on into town, tracing along the edge of the park where the football team plays in the fall, winding past the shuttered storefronts and recent revitalization projects unperturbed by either one.

The factories provided one rhythm to live by, the steady clatter of machinery and the long measured breaths of shift changes, traffic flooding the street at even eight hour intervals. Yet the creek was always a separate song, a constant comforting presence woven into the background of every walk in the park and trip across town, steadfast beneath the fluctuations of fortune. And so this is what I hope, for one boy or one town or perhaps something even larger- that when the world changes too quickly to fathom, and the old stories no longer hold true, we are able to find peace in the things that remain.

Mixed Messages

I am not a good protester. I reached this realization as an undergrad, standing outside a faculty meeting where I was supposed to be expressing ardent opposition to the fracking of natural gas reserves which lay beneath my college's experimental forest. Instead I was holding up a sign emblazoned with perhaps the world's least effective slogan, which read "Let's talk!"

A wannabe environmentalist faced with an extractive threat that hit close to home, I should have been offering a bold statement of belief, a strident defense of the inherent values of intact ecosystems and the imperative of fossil fuel independence. Instead, I had managed to muster what could charitably be termed a polite request.

I was, in fact, opposed to the project. If nothing else, the whole thing seemed so entirely unnecessary, a prime instance of development being proposed simply for development's sake. On a campus that competed in energy conservation challenges and poured crucial building funds into efficiency upgrades, it seemed unfathomable that we could turn around and endorse the region's most controversial energy development technique. Yet when it came time to make a stand I found myself unwilling to adopt a more definitive stance, wary of embracing the catchy rebelliousness of "no fracking way" or one of the other popular phrases that have sprung out of broad-brush opposition to drilling. Even now I find it difficult to fully articulate what held me back from such a seemingly simple declaration, to explain the sense of anxiety and uncertainty that dogged my attempt to engage with an issue which so many others find perfectly clear.

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The good news was that any possible development was still in a very tentative phase at that point, no leases signed or final decisions made. Yet even having the possibility of drilling laid on the table had yielded its own network of social fractures. Open community meetings intended to bring clarity to a

difficult set of issues got derailed by participants who came better prepared to talk than to listen, punctuated by testy exchanges and the occasional dramatic exit, discussions hinging more on faction than fact.

The most recent meeting to that point had opened with an explanation of drilling and fracturing, laid out step-by-step by an avuncular representative of the independent driller's association in a presentation which reduced the highly technical multiphase extraction process to the primary-colored simplicity of an animated Powerpoint. Despite the faintly condescending tone, everything in the presentation lined up with what I had learned about the drilling process from non-industry sources, and I was feeling hopeful that we might make it through at least one meeting without a mess.

In the question and answer session that followed, a student captured the microphone for an extended harangue, less concerned with learning about the intricacy of pipe perforation or annular pressure monitoring than with asking how the industry intended to prevent our towns from filling with criminals. Backed only by a vague reference to troubled western shale formations, she conjured the threat of transient outsiders, unmoored from community accountability and unwatched by their employers, running amok through the quiet countryside. The drilling representative countered with his own vision of blue collar Americana, honest and upstanding rig workers laboring to support their families and bring prosperity to our corner of the Marcellus.

From that point there was really nowhere for the exchange to go but down, the drilling rep getting red in the face and sweating through his suit, the student playing a game of keep-away with the moderator to maintain her grip on the microphone, nose ring flashing in the stage lighting. As they talked over one another in an attempt to be heard, the conversation became scattered with sentence fragments and cut-off clauses, further reducing the chance of any useful information emerging. The audience grew restless, chatting amongst themselves, and to be honest my attention strayed as well,

eavesdropping on the cross-talk breaking out around me. The crew-cut young man sitting in the next row leaned over to his friend, visibly upset.

"I worked rigs all last summer. There's nothing wrong with me!" His friend nodded, muttered something encouraging. "What do you think she'd do if I went up there and told her, huh?" the rig-worker continued, increasingly vehement. "I bet she wouldn't say that kind of shit to my face."

Although I can't help but wish he had phrased it more politely, the rig-worker raised a basic point. Fighting against the drilling industry in abstract feels simple and morally righteous, a battle waged against some distant and anonymous evil. Being face-to-face with the people employed by it, many of whom are fiercely protective of their livelihood, is a great deal less comfortable. With just a stroll downtown from that public meeting I could find cars sporting bumper-stickers emblazoned with "rigworker pride" and similar slogans touting the boons of the Marcellus. With a quick search online I could pull up forums where workers commiserate about the long hours and homesickness of a difficult job, pages of industry inside-jokes I can only half comprehend, and defensive tirades decrying the supposed ignorance of fracktivists. It's been disheartening but not all that surprising to see just how quickly the lines between employment and identity can dissolve.

Nor are the workers alone in blurring the boundary between individual roles and regional development patterns. The arrival of unfamiliar faces that tends to coincide with increased drilling can cause those alarmed by fracking to throw the supposedly suspicious character of the workers into their long list of complaints. The joke goes that the resemblance between the job title "roughneck" and the derogatory "redneck" runs a good bit deeper than spelling, and to be honest, that's not entirely wrong in my experience. Yet extending that chain of association onwards to say that roughneck sounds like redneck which in turn sounds like trouble introduces ugly undertones of class and culture, a potential for

personal offense that need not be inherent in natural resource issues yet somehow never seems far away.

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Part of the escalating reactions that day can be chalked up to the atmosphere created by the original arguing pair, the complete absence of data that left them both relying on vague suspicions and broad generalizations. In reality, the effect of Pennsylvania's natural gas boom on crime has been difficult to determine. A study of drilling's social effects undertaken by a multi-state coalition of researchers found that for most of Pennsylvania the changes have been too small to meet the threshold for statistical validity, with only the six counties with the highest rate of drilling showing a meaningful trend. In those cases, there may be some basis for alarm, as crime rates have risen between ten and twenty percent over the boom period, depending on the specific location. Even this statistically significant finding is only a correlation though, and making the causative link between the growth of resource development and some measurable rise in criminal activity would be a more difficult undertaking.

As to the notion of mysterious drifters arriving from out of town, the results are similarly muddled. A Penn State analysis of employment data from 2002 to 2011 showed that roughly half of Pennsylvania's oil and gas workers were from oil and gas producing counties within the state, meaning that even if not every worker was precisely in their hometown, they were at least in familiar territory. Lack of precise data means that the out-of-county workers could have come from across the state, across the nation, or anywhere in between, a significant gap in the picture. Another admitted limitation to the study is the likelihood that the workforce has shifted closer to home in recent years, as the push for job-preparedness has seen technical schools throughout the state competing to produce the drillers of the future.

All of this is not to dismiss the student's concerns- probably more of us should be puzzling over the social and economic effects of increased drilling. It is only to point out that the world at large is not controlled in the way that experimental findings ought to be, so the answers we get tend to be filled with caveats and complications, difficult to reconcile with the sweeping assumptions so often thrown around.

The case is becoming a bit clearer for environmental effects, with a growing body of studies from around the country sounding the alarm on problems ranging from improperly cemented well-casings and methane leaks to the seemingly no-win question of wastewater management. If that makes you anxious, don't worry though, it's also possible to pick out studies from prestigious sources like Yale and the National Academy of Sciences that appear to clear the industry of well-water contamination. Even the official EPA study of water contamination released in 2015 was hailed as scientific vindication by both drillers and environmentalists, proving simultaneously that cases of drilling-related contamination had definitely occurred and that the number of cases in which a causal link could be made was small in proportion to the rate of drilling. Just recently, my home county experienced what *might* have been the first occurrence of drilling-induced seismic activity in the state, but the barely detectable magnitude and lack of precedent mean that no one is prepared to sound the alarm just yet.

It's tempting to chalk up some of the unsatisfying science to the relative newness of the drilling techniques in question, and it may be that more time and studies will solidify the consensus on safety. Yet this line of logic can also lead back into a tangle, because somehow even the basic age of the process commonly referred to as "fracking" is in dispute. Although the early versions weren't successful enough to warrant much excitement, wells drilled using pressurized fluids have been experimented with since the days of the dust bowl, leading industry folks to assert that this is an evolution not a revolution. Strange as that may sound for a technology that seized the spotlight barely over a decade ago, those early dates are cited by no less of an authority than the US Geological Service's public webpage. Yet, the

industry today depends on a convergence of multiple innovations ranging from horizontal drilling to a chemical cocktail of lubricants, acids, biocides and surfractants. This combination is indeed distinctly modern and, to bring the puzzle full circle, the ongoing boom in “frackademic” studies may be seen as an indicator of just how unique and potentially concerning those processes are perceived to be.

The question of just who authors those studies worsens the overall confusion, with reports published by interest groups on either side instantly dismissed by their opposition and even ostensibly neutral universities coming under fire for the potential impact of natural gas money in the institutional coffers. The trouble is not so much any specific date or piece of data, but the state of selective science achieved around drilling so far, in which it’s all too easy to find facts that fit your personal perceptions of risk and reward. Although I’ve done my best to approach the issues objectively, I can’t rule out the possibility that something as unscientific as a cautious disposition adds to my concerns about the industry’s environmental effects. It’s harder to stand up and speak truth to power when the truth itself feels like a moving target.

On the day I held that stupid sign I had showed up intending to fight for the preservation of a familiar forest and got intimidated by the politics instead, afraid of diving into an issue marred by scientific uncertainty and riven by partisan divides. I know full well that the tendency for opposition to industry to be interpreted as an attack on economic wellbeing is an oversimplification, willfully ignorant of all the ways in which functional ecosystems underpin quality of life. I’m aware that although it’s possible for ambitious regulation to slow the much-touted job creation, such an outcome would be as much a product of the industry’s refusal to bear any additional costs as some supposed environmentalist intransigence. Even so, it makes it more difficult to dream of the relief of dismantled wellpads and departing tanker trunks, knowing that this seemingly idyllic outcome could also leave those who linked their fortunes to the Marcellus in the dust. Like I said, I’m not a good protester.

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And yet, there must be reasons to resist that rest on truly solid ground, simple matters of principle that won't leave me feeling like a victory for the things I believe in would mean a defeat for some family's solvency. The widely acknowledged ability to develop and use a resource like natural gas does not mean that *all* reserves should be open to access, at any time, without restrictions. It doesn't mean placing a wellpad adjacent to the site of class trips and ecology lessons, or running horizontal pipe beneath multiyear experimental plots.

In the larger arena of the state, I don't think that companies have lobbied for tax exemptions, setback waivers, and eminent domain rights for their infrastructure out of concern for their workers. Chemical non-disclosure agreements and trade secret designations didn't become the status quo as a show of support for the community. It would be difficult to believe that the lawyerly attempts to cut off local zoning powers and the stream of political donations flowing from the drilling companies to the state legislature has evolved from a sense of the public economic good. When a slowdown does come, whether from environmental concern or a simple economic slump, I'd be prepared to bet that the decision-makers of Range, Chesapeake and EQT won't suffer in solidarity with the rig-workers who are so ready to defend them.

As frustrating as they were to watch, the competing agendas of the blustering company representative, alarmist undergrad, and reactionary rig-worker can't be written off as simply a case of all sides getting equally carried away. Although the absence of facts and escalating rhetoric left everyone involved looking less than reasonable, the disparities in financial clout, social status, and political access between them mean that their respective arguments carry very different degrees of danger.

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If I had it to do over again, I don't know if I would change my sign or not. After all, asking for a little more conversation and consideration is never really bad advice, especially in a situation where trust is getting lost in the competition to control the narrative. The drilling proposal ultimately died in committee, a process unaffected by my marginal contribution, so the college's forest was not subjected to what might have been its most ambitious set of experimental conditions yet.

Whether or not we'll find our way beyond the larger delusion of ecology versus economy still remains to be seen. I can't help but think such a broken binary will always tilt the outcome in favor of industry, companies continuing to get their way by leveraging the accepted notion that you can't pay your bills with biodiversity, ignoring the possibility that the path to the middle class need not be paved with pipelines and impoundment pits.

In reality, there's not much I believe on the subject of fracking that could be painted on a cardboard sign, slapped on a bumper sticker or made into a pithy catchphrase. Certainty and broad principles may sell better than contradiction and complexity, but that doesn't make them comfortable. It would be hard to organize a rally that argued for both the precautionary principle and long-term economic development, for stringent restrictions on extraction and respect for the workers who carry it out. Yet, if there was such a thing, maybe I would be a good protester after all.

Heart's Content

I don't have a lot of experience with really big trees, but I'm pretty sure this qualifies. The trunks are too huge to put my arms around, so tall that to see the tops I have to crane back and go sun-blind with squinting, the tough bark split into thick, palm-sized plates. The morning light is blocked out in some places, solid stretches of shadow formed by crisscrossing boughs of white pine and hemlock, traced through with the occasional beech limb, smooth and gray as narrow shadows themselves. Then a sharp beam of light breaks through where a tree has died, burnishing a single standing snag or a fallen trunk resting on the needles, lending a glow to the process of decay and the mulch of the forest floor. Everything is hushed, soft carpeted earth swallowing the sound of footsteps. The air feels thick and still, the ground exhaling a live loamy scent as the early chill slowly eases.

These are probably not old trees by other people's standards, their 300 to 400 years still almost juvenile in comparison to mighty redwoods or venerable sequoias. Yet this stand, a 20 acre island of preservation in a forest that was once a virtual clear-cut from end to end, is exceptional. That it was voluntarily set aside by a timber company, back in the late nineteenth century when the general consensus still held that America's woodlands were untouchably vast, makes it nothing short of a living monument to the rare miracle of self-restraint.

Heart's Content, as the Wheeler and Dusenbury logging company named the stand upon setting it aside, is much like the rest of the forest that once blanketed the Allegheny plateau, deep woodland composed of a mixture of highly useful species. White pine went mostly to the shipping industry, light enough for barrel staves, straight-grained enough for ship's masts. Hemlock packs a unique chemical cocktail, useful for tanning hides when extracted and providing rot resistance when left in the timber itself. Dense beech wood was used for railroad ties, convenient for the lines that cut right through the forest, hauling timber on tracks that were built from the same cargo.

The transition from forest to virtual brush patch was depressingly short, and sparks from the passage of trains set off periodic wildfires in what scrappy vegetation remained. When the Forest Service took over the core acreage of what now composes the Allegheny National Forest, it was less in hopes of recreating the thriving forest ecosystems of yore and more as damage control, to prevent erosion from the cut and burned slopes from clogging up the economically important Allegheny River system. Yet this stand, once the site of a camp where loggers lived, was preserved well before the Forest Service stepped in.

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I want to believe that those who use the land on a daily basis can naturally move from practical knowledge into a more emotional appreciation, constant interaction building a deep-seated respect for the environment even when the work itself involves a controlled form of damage. After all, there is a lot you can learn from a tree that has fallen. The quality of the grain and the smell of the wood, the strength and sap and snap of it are hard to guess from the outside. It's sad that these secrets are only revealed in destruction, but surely it must also convey a kind of intimacy, an insight different from that of the casual external observer. In many cases the circumstances mask any incipient connection, the harrying forces of competition and market fluctuations driving the notion of giving back to the land steadily down a long list of priorities. In that light, it's especially heartening to catch an example now and then of people who had both the good intentions and the breathing room, who managed to seize an opportunity to do the right thing.

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Cross the little access road by Heart's Content, pick up the end of another trail, and I'm suddenly in an altogether different kind of forest. Still undeniably pretty, but the trees are younger and their trunks thinner, curling ferns and other low plants filling in the more frequent patches of open ground.

The light is brighter, filtering down with ease through a more open canopy, and the sky somehow feels closer as well, with only half the height of trees to hold it up. Now and then I come across stands laid out in suspiciously straight rows, a replanting project that has not yet had time to naturalize. In other places older trees are marked with a splash of pink spray paint or an orange ribbon in anticipation of future harvesting.

It's a rough transition, and I have to keep reminding myself that a national forest is fundamentally different in intent than any park or preserve. The Allegheny National Forest is meant to be working land, governed under the precarious balance of the multiple use doctrine so as to provide services for tourists, timber-sellers and all the other groups with a vested interest in this area. Although thankfully the work today proceeds on a more limited scale than the wild spree which originally felled it, sustained yield rather than some loftier conservation goal is still the rule of the road for much of the forest. The species that have grown up since that first transformative clearance also differ from their predecessors, creating a forest that is markedly more deciduous than the plateau's past, heavy on high-value hardwoods like cherry and maple, although some of the same pines and hemlocks still make it into the mix.

This is the only national forest in Pennsylvania, and it sometimes feels like a world apart, a microcosm of western-style public land politics complete with all of the inevitable conflicts that break out in a place with a legal mandate to be all things to all people. Timber harvesting persists, even if the mills aren't as productive as they once were, wood shipped out to be made into fancy furniture and veneers where it was once processed nearby for more workaday uses. There are also oil and natural gas wells in escalating numbers, a potential management headache of impressive proportions given that most of the mineral rights underlying the forest are privately owned. If all is peaceful within the confines of the Tionesta Scenic Area or the byway of the North Country Trail, the fights over the forest in general seems to have run continuously from settlement onwards.

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Part of the visceral comfort of old trees is that they seem to stop time, a piece of the world that feels much the same now as it did a decade ago or a century before that. Heart's Content sells the notion that you can rope off the things you love, create a living time capsule to preserve the deep stillness of straight-trunked trees and the slow liquid light filtering through the high ceiling of branches. To a certain extent you can. Designated as a recreation area and beloved by tourists, neither logging nor drilling is likely to be allowed to touch the preserved land.

Then again, there is no such thing as a lasting stable state in nature. Trees will fall and new trees will grow, shifting the average age of the forest, opening new patches of sunlight high above and filling in the lower canopy as upstart seedlings crowd around the knees of the old growth. New scourges are entering the area, wooly hemlock adelgid and beech bark disease spotted in the surrounding counties and now feared to be making inroads on the forest itself. Those ecological threats may be stopped through careful treatment or the difficult surgery of selective logging, contained before they get near Hearts' Content. Then again, nature provides few guarantees.

This is the paradox of preservation. On the one hand it seems destined to be a losing game, founded on ideals of lasting stability that don't align with the wild variability of the real world, sometimes warping history to paint a pristine landscape over the evidence of earlier inhabitance and use. On the other hand, it is a gesture that is endearing, hopeful and wonderfully human, the impulse to draw a firm protective line around treasured places, to proclaim their intrinsic worth and beauty to the world at large. I imagine this in a timber developer's heart, in the middle of a landscape that he had a hand in converting from deepest forest to sorry-looking brush pile, the desperate gesture to hang on to some remnant of an ancient green quiet, of a place that still embodied so much that was recently lost. Late but not quite too late, finding his heart's content.

The Name Game

When I was a child I spoke in tongues. Not in the proper demonic sense, just gibberish, jumbled sounds that must have meant something to me but were incomprehensible to anyone else. Memories are unreliable at that age, intention hard to define, but I think I recall that I was searching for something. I wanted words that fit the world more closely, that trapped something of the object named within the sound and sensation of speech.

I figured that the real word for wind must hush and whisper in a way that a single short syllable cannot contain. The term for a creek ought to conjure up more burbling motion than the consonant-heavy crunch of the current word. My little fascination went no further than nouns, and even then only concrete ones, no interest in renaming things that couldn't be heard and felt. It was never really a valid attempt at language, more of an aimless exploration, stringing together bits of noise and hoping to hit on something that resonated. Needless to say I never made any breakthroughs.

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It's useful to have something to blame for particularly embarrassing oddities, and in this case I will pass the buck onto the common myths and fairy tales that so often add an extra element of strangeness to childhood. I inhaled stories like that by the bookful, dark forests and quests, rituals and riddles of seemingly great seriousness, all folded under the heading of childish fables. Names, in those old stories, are not something thrown casually into conversation but a critical secret, containing a deep knowledge about the people they refers to. They have a power that crosses the line between the representative symbol and the thing itself, useful to the namer and perhaps dangerous to the named. Only guess the right word and fate is altered- Rumpelstiltskin spins your straw into gold and the troll under the bridge lets you pass.

It is a quiet form of magic, the ability to know a person or a creature not by slow imperfect degrees but in a sudden gust of insight, a comprehension that is total and profound, the revelation of recognition.

Maybe it was an understandable daydream for someone who loves the natural world but was beginning to understand how small, halting and incomplete her grasp of it was. I wanted to skip the slow process of understanding things little by little and day by day, rush past the increments of accumulated experience, to instead open my mouth and speak the world whole.

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I realize now that there are no magic words, no singular perfect answers to the puzzle provided by a place or a natural object. At best we make do with a scattering of imperfect phrases, a map composed of layers of competing nicknames and in-jokes, private geographies tailored to the speaker and the circumstances. After all, it's people who really need the terminology. The natural world tends to know what it is, to be whole and secure without labels. Communication outside of humankind is more often a spray of scent or a flash of color, a slow seep of chemicals between roots deep underground.

These messages may convey friend or foe, sound the alarm or offer a proposition, but there is no need to assuage the kind of existential insecurity that names do. Few things outside mankind are constantly at work affirming who they are and where they fit, placing a pin in the map and tying themselves to it again and again with the flimsy cords of story and meaning. Attempting to fit words to the wonders we see around us is ultimately a human project, neither bad nor good but simply necessary, another way for a mere bipedal ape to build the confidence to venture out into the vastness of the world.

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Sometimes I wake up in the night disoriented, unable to remember where I am. I look out the window for the laced pattern of catalpa branches or the bulging shape of the hollowed burl where the raccoons nested last year, listen for the thin sizzle of fireflies or the swooping flutter of bats. When I'm home the presence of these things are an instant reassurance, the realization of location settling peacefully in before coherent thoughts even manage to form. When I'm away at school it takes longer to get oriented, sizing up the scenery- the shape of a parking lot, the yellow streetlamp glow, the high ragged line of a western mountain horizon looming at the edge of my vision. Even once I've figured it out, it's harder to summon up the kind of quick calm that comes from a truly known place.

Without the comfort of physical things, I still have the consolation of old familiar names, so I lay awake and list them. Trees first, maybe: smooth-skinned beech along the creek, oak on the ridgetops, hemlock pooling deep shade in the hollows and maple a blaze of color in the fall. I wander from whippy interwoven sprouts of sassafras to black walnut spattering the ground with husks to pale, patch-peeling sycamore. Next I stoop down in my mental meander, spotting three leaved trillium, little green may-apples and bright red teaberries nestled low on mossy ground. The drooping blossoms of trout lily and dutchman's breeches are there, the ghostly bells of fleeting Indian pipe and bright bursts of bee balm. Sometimes I name the rivers like a rosary: swift little Hell's Run and Connoquenessing, the rollicking Slippery Rock flowing to Allegheny, meeting Monongahela on its way to the broad Ohio.

In a certain sense I never grew out of the original gibberish, the conviction of connection between sound and substance, imagining that I summon the scent of a flower or the dappling light of a creek by thinking the name with enough sincerity. Nonsense of course, a flimsy handful of syllables clutched close against the enormity of the world. Yet it's a little magic all the same.

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Selected Musical References for "Bluegrass Ecology"

Absence- Carrie Rodriguez *(*Don't a maple look stronger/When its last leaves have fallen to the snow/Snow, sleet, wind and rain/Breath on a window pane…*")*

Annabelle- Gillian Welch ("We cannot have all things to please us/No matter how we try/Until we all have gone to Jesus/We can only wonder why…")

Appalachian Refugee- Scott Miller ("Hear the voice of by-god West Virginia/Calling through the mist that lies between the/Greenest ridges they call blue/The oldest river still called New…")

Black Flowers- Lynn Miles ("I live beside this old coal mine/The whistle blows everyday on time/But the rain pours down and the wind blows hard/Black flowers grow in my yard…")

Blue Ridge Mountain- Hurray for the Riff-Raff ("My heart is a Blue Ridge mountain/And my head an overflowing fountain…")

Blue Side of the Mountain- The Steeldrivers ("There's a place in a piney hollow/No one but me can find/Deep and dark like a hurt in my heart/On the blue side of the mountain/Where the sun don't ever shine…")

Coal Tattoo- Billy Ed Wheeler ("Goodbye to buckeye and white sycamore, I'm leaving you behind/'Cause I've been a coal miner all of my life, laying down track in the hole/Got a back like an ironwood bent by the wind and blood veins blue as the coal…")

Country Girl- Carolina Chocolate Drops ("All day I dream about a place in the sun/Kinda like where I'm from/With the tall grass blowin' in the breeze/Runnin' barefoot round the tall oak trees…")

Early Morning Breeze- Dolly Parton ("The aster and the dahlia and the wild geraniums/Drops of dew still linger on the iris leaves/In the meadow where I'm walking in the early morning breeze…")

Ellis County- Buddy Miller ("Take me back when times were hard but we didn't know it/If we ate it we had to grow it/Take me back when all we could afford was laughter/And two mules instead of a tractor…")

Frost in the Hollows- Catherine MacLellan ("My little mountain home through the trees/Shining like the moon on a silver breeze…")

Georgia on a Fast Train- Billy Joe Shaver ("I wasn't born no yesterday/Got a good Christian raisin' and an eighth grade education/Ain't no need in you treatin' me this way")

God Makes No Mistakes- Loretta Lynn ("Why is this little baby born/All twisted and out of shape/We're not to question what he does/Because God makes no mistakes…")

Green Rolling Hills- Emmylou Harris ("Oh the green rolling hills of West Virginia/Are the closest thing to heaven that I know/The times are sad and drear and I cannot linger here/They'll hold me and never let me go…")

Leaving Eden- Carolina Chocolate Drops ("And the mockingbird can sing like the crying of the dove/And I can't tell my daughters all the things that I'm scared of/But I am not afraid of that bright glory up above/Because dying is just another way to leave the things you love…")

Lone Pine Hill- Justin Townes Earle ("But then they knocked down the timber/ And burned off the brush/To get to the riches below/And when they pulled out/They left cold black ground/And one pine standing alone…")

Never Leave Harlan Alive- Red Molly ("When times got hard and tobacco wasn't sellin'/Grandad knew what he'd do to survive/Go dig Harlan coal and send the money back to Granny/But he never left Harlan alive…")

O Cumberland River- Old Crow Medicine Show ("Locks and dams weren't meant to last/There's nothing we can build to ever hold her back/She can't be tamed by the hand of man/The Cumberland River is gonna rise again…")

One More Dollar- Gillian Welch ("But I miss those hills and the windy pines, their song seemed to suit me/So I sent my wages to my home, said soon we'd be together…)

Paradise- John Prine ("Daddy won't you take me back to Muhlenberg County/In eastern Kentucky, where paradise lay/I'm sorry now son but you're too late in asking/Mr. Peabody's coal train has hauled it away…")

Rock Salt and Nails- Bruce Phillips ("On the banks of the river where the willows hang down/And the wild birds all warble with a low moaning sound/Down in the hollow where the waters run cold…")

The Mountain- Levon Helm ("There's a hole in this mountain, it's dark and it's deep/And God only knows the secrets that it keeps/There's a chill in the air only miners can feel/And there's ghosts in the tunnels that the company seals…")

Van Lear Rose- Loretta Lynn ("She was the belle of Johnson County/Ohio River to Big Sandy/A beauty to behold/Like a diamond in the coal…")

Waterbound- Traditional/Author Unknown ("Seen a black cat crawling on an old box car/A rusty door and a falling star/Many years I'm bound to roam/Waterbound and I can't get home…")

Where Grass Won't Grow- George Jones ("The dirt was clay, and was the color of the blood in me/A twelve acre farm on a ridge in south Tennessee…")

White Dove- The Stanley Brothers ("In the deep rolling hills of Virginia/There's a place I love so well/Where I spent my childhood days/In the cabin where we loved to dwell…")