

Stephanie Anderson

# The Jerde Ranch

*This is a chapter of a larger work. Phil's story continues after the end of this installment.*

Imagine a map of the contiguous states. Imagine the 77,184-square-mile rectangle of South Dakota: the curving Missouri River that splits it in half east and west, the olive splotches on most maps that indicate Black Hills National Forest, Custer National Forest, and two tracts of national grassland, the extra-thick lines indicating the Rosebud, Pine Ridge, Standing Rock, Lower Brule, Crow Creek, and Cheyenne River Indian Reservations, plus the Flandreau Santee, Sisseton-Wahpeton Oyate, and Yankton Tribal Lands, the blue badges of Interstates 90 and 29, the notch in the northeast corner of the state's border with Minnesota. Envision, too, the squared borders of the southwest and northwest corners of this Mount Rushmore State, neat lines drawn by government men in 1889 in far-away Washington, D.C. Focus on that northwest corner, the corner with no cities, no interstate, no gas stations for sometimes 80 miles between its small towns. People often say the area is the middle of nowhere. In a way, they are not mistaken—in 2009, artist and technologist Stephen Von Worley, who mapped all of the McDonald's restaurants in the lower 48 states, found that the "McFarthest Spot," the longest distance from a McDonald's in the continental U.S., lies between Glad Valley and Meadow in this very corner of South Dakota. Other people – mostly locals because few outsiders do more than pass through – say this piece of the Great Plains (or the Midwest) offers a kind of "peace and quiet" found nowhere else. For those who do traverse this section of the state, there are few highways from which to choose. Let us select Highway 20, one that cuts the top third of the state's west side in half from Mobridge, S.D., situated along the banks of the Missouri, all the way to Montana – 200 miles of two-lane blacktop.

In these 200 miles, a driver will pass through the following towns: Timber Lake, 453 souls; Isabel, 138; Bison, 334; Prairie City, 23; Buffalo, 330; and at the end of the road, Camp Crook, home of 63. A driver will also pass through the unincorporated communities of Trail City, Glad Valley and Meadow (which are the "McFarthest Spots"), and Reva; these four villages the Census Bureau does not measure, but personal observation shows a handful of families. But the meager municipality populations are misleading. Beyond the limits of the no-stoplight towns are ranches and farms, sometimes visible from the thin line of Highway 20, but most out of sight. The state boasts 833,854 people – but in the extreme northwest corner, in the counties of Harding and Perkins, there are just 4,353 people living in 5,542 square miles of prairie. The math works out awkwardly at 0.79 of a person per square mile on average. The numbers come out more gracefully when figuring the cattle population on the same land, which works out to an average of 29 cattle per square mile, 161,000 in all. Obviously,

if *Animal Farm* had been set in western South Dakota, the cows would have been in charge.

I'm not in western South Dakota to see cows, though. I'm here to see buffalo that I have witnessed in the flesh only once before at Custer State Park in the Black Hills. I feel my lack of real-life buffalo experience is fairly ironic given that I grew up outside of a western South Dakota town called Bison. A giant statue of a buffalo, complete with stiff statue grass at its feet, guards the entrance to town. When I tell people where I grew up, they almost always ask if there are any bison to be found near Bison. I say, "I don't think so." Although one day, after I moved away for college, my father was checking out the cattle on our ranch and saw a lone male buffalo standing on top of a hill, looking a lot like the Bison statue. He thinks it may have escaped from someone's buffalo ranch or perhaps Custer State Park.

I zoom down Highway 20 on my way to the Jerde Ranch, where Phil and Jill Jerde and their family raise grass-fed buffalo. Hundreds of bison strong, theirs is one of the largest commercial herds in the United States. About 4,500 other ranches across the U.S. are raising the same animal, keeping alive a species that almost vanished from the prairie. It is early May, 50 degrees and sunny with only a slight breeze, rare in this windy country. I wish it were summer because that's when this part of South Dakota comes alive. A few sights a driver is sure to see along Highway 20 at the height of summer: grassland, cattle, horses, wheat fields, corn fields, hay fields, hay bales, farmsteads, deer (mule deer mostly, especially in the evening and early morning), the non-native state bird called the Chinese ring-necked pheasant, grouse, sparrows, tractors, maybe a pronghorn antelope, pickup trucks, barbed wire fences, tree lots serving as windbreaks, brown hawks, rocks piled at the edges of fields, roadkill, wild sunflowers, white country churches, men and women riding horses, and gravel roads shooting away from the highway that seem to lead nowhere.

One of these nowhere roads is Sorum Road, just west of Prairie City in Perkins County. I turn south off Highway 20 onto this not-quite-two-lane gravel thoroughfare; the inner tires of both northbound and southbound vehicles share the same middle wheel track, making it necessary for one or both vehicles, if they meet, to move their outside tires off the gravel and into the ditch. The grassland on both sides of the road shows a tint of green beneath the cover of last year's tan dried grass, but the new growth is minimal: this area—and much of the Great Plains from North Dakota to Texas—is suffering from drought. The U.S. Drought Monitor map from that May week shows the northwest corner of South Dakota colored in bright red, the "Extreme" category, not as severe as the burgundy "Exceptional" category, but dry nonetheless.

Despite drought, farmers and ranchers must grow something, must feed their families, and I see evidence of their perseverance in patches of newly tilled farmland along the road. These are not the sprawling, perfectly symmetrical fields of Iowa, but fields that at first appear haphazard, twisting around creeks, ringing the outside edge of a hill while leaving the top unbroken. On closer inspection, it's clear the fields along Sorum Road follow the contours of the land, hugging the hills instead of plowing over them, stopping at the small creeks instead of filling them in and farming over. The road, too, embraces the hills. It swells up and down over quick knolls that surge and fall sharply. I move one tire into the

grass as I pop over every hill, worried another car is zipping along in the opposite direction.

Also unlike Iowa, this is not corn country; the majority of western South Dakota is unsuitable for corn, being too dry and hilly in the west and too mountainous to the south where the Black Hills jut skyward. Not that the farmers here don't want to grow corn; many are enamored with the fat government subsidies and the big machinery their neighbors on the east side of the state have. They try. A few farmers own fields flat and loamy enough to grow the tall variety of grass that is field corn, but their yields cannot begin to compare with those of eastern South Dakota's or Iowa's or Minnesota's or Illinois' farmers. Most farmers who grow corn in western South Dakota chop it into silage that they feed their cattle over the long winter. Wheat and cattle, not corn, are kings here.

After six miles or so, Sorum Road curves west. Soon a junction appears— a narrower, less traveled gravel strip, Zeona Road, wants to continue the journey south. Skinny gray poles, the long-ago work of the Rural Electric Administration under the New Deal, hold up two electrical wires. Together poles and wires march south, bringing a current of electricity to the isolated homes scattered around, present but mostly unseen. On Zeona Road, drivers leave behind the comfort of street signs; the side roads that branch off this line of gravel are unnamed.

I am much too early. I budgeted an hour and a half to drive from my parents' ranch, where I have spent the last week, to the Jerde Ranch. I find myself at the Sorum/Zeona junction half an hour before I'm supposed to arrive with just four and a half miles to go. I pull off the road and snap some pictures, scrawl notes, consider the prairie, drink water. I have a cold – I'm stuffy, my throat is raw, my voice husky. Country songs twang on the radio. An oldie, "Blue Clear Sky" by George Strait, describes a "walkin', talkin' true love." The chorus eloquently rhymes "true love" with "you love" and "new love." I feel small in my parents' three-quarter-ton truck with more horsepower than I've handled in a while. I consider peeing by the side of the road, but it's morning and I've already met one car on Sorum Road. Better not. I put the truck in drive.

Phil said there would be a couple of buffalo skulls and a fire hydrant at the end of the road leading to his ranch. I will not have the luxury of a mailbox with his name to verify the road (their mail comes instead to a box attached to his uncle's mailbox post a half mile from his house). He said to go "about 4.5 miles past the junction," but when I've traveled this distance according to the odometer, there is no road in sight. I keep driving, looking out for buffalo skulls and fire hydrants. This is how ranchers give directions. When you ask how to reach their homes, they tell you things like, "Go....well, I don't know, about five miles down the road, and then you see the big cottonwood tree on the north side and go another mile or so after that and turn by the pile of rocks. You can't miss it." Right.

I turn east on an unnamed (also gravel) road that I think is the correct one, just a lane wide and riddled with washboards. I see a ranch almost a mile down. A few curves, a few rises and, suddenly, a cabin on a hill above like a castle, with logs the color of yellow straw and a pine-tree green roof. I guide the truck up the slope, past a row of trees that don't yet have their spring leaves. A pickup emblazoned with the words "Great Plains Buffalo" on the door and a horse trailer attached tell me I'm at the right

place. A blue, 1983 Ford F-150 also sits in the driveway, along with several other pickups. Against the garage wall sits a collection of animal skulls, horns, and assorted bones, some with bits of hide still clinging and horns intact. In the yard, before the hill descends to the barnyard and outbuildings below, is an entire playground that came from a closed country school. A country school is as it sounds: a school located not in a town but out in the country, sometimes on a lonely hill but usually next to a “major road” like Sorum Road. Country schools used to dot the rural landscape so that farm children could walk, bike, or ride to school. The number of one-room schoolhouses in South Dakota peaked in 1916, with 5,011 in operation. In the early 1930s, that number had decreased to 4,731. By the turn of the century, there were only 50 left, and today there are less than two dozen. I have cousins that went to country school. Though the students are long gone, many of the abandoned schools remain standing, and ranchers still refer to the “school section,” the section of land in a township set aside by law for the school. The merry-go-round, swing set, and tetherball pole that once stood stark against the sky at some prairie school are made of gray iron bars, old-fashioned and rather drab looking even in the sunshine swathing the Jerde Ranch.

I walk up the wooden deck toward the house. Through a glass door, I can see Jill preparing breakfast for five boys sitting on high-top chairs around the half-circle breakfast bar that, in total, seats 12. She smiles and waves, pointing toward another door at my left leading into the garage. I enter – children’s boots and coats are scattered in every direction – and end up in the kitchen. Jill is making her version of Orange Julius drinks in a blender. She is about five foot eight, with shoulder-length blonde hair, sky-colored eyes, and a voice exuding the energy that some moms have while others sound weary or as though they’re faking it. She could still be, and definitely was in her younger days, one of Kerouac’s “pretty girls” from Iowa where he finds “the pie bigger, the ice cream richer...the most beautiful bebies of girls everywhere I looked...and the prettiest girls in the world live in Des Moines.” We assume these Iowa girls look much like Jill even though she hails from Minnesota: blonde, blue-eyed, tall, showing their milk-white teeth, not rail thin but not overweight; girls with arms that can lift buckets of corn, muscular underneath their voluptuousness. She offers me an Orange Julius, which I decline since I’ve already eaten breakfast. I can’t imagine her being anything but just so nice.

The kids assail me with questions, and two-year-old Viggo in a high chair jabbars in what could only loosely be called baby talk. “Orange,” he says with clarity. “Juice. I’m Viggo. That’s Jesse.” I understand most of what he says, despite the orange drink dribbling across his face, the counter, and occasionally my shoulder because he wants to drink, talk, and fling his straw through the air at the same time. The other boys at the counter are John, 10; Bo, 8; Jack, 6; and Jesse, 4. Another son, Payton, 20, cradles the youngest daughter, two-month-old Quilla, on the living room couch. Hannah, a much shyer girl of 13 with what I will realize later is her father’s walnut brown hair and quiet demeanor, murmurs hello and moves through the kitchen without another word. The eldest daughter, Emily, 21, is home from college for the weekend and taking a shower. Another daughter, Eva, 15, is away babysitting for a neighbor family. In all, the Jerde household includes 10 children, all of whom have been or will be



homeschooled by Jill. Even if the Jerdes wanted to send their children to public school (they definitely do not), they would have a hard time doing so: though there's a grade school about 20 miles away in Reva, the nearest high school is 40 miles away in Bison – and there's no bus service. The family is close. They spend most of their time with one another, but they are warmer to strangers than most children I've met. It's not long before one of the young boys, I can't remember which, takes baby Quilla from the safety of Payton's arms and hands her to me like a toy doll. Oh boy. I don't remember the last time I held a baby, but I do remember that they usually scream when I do. She doesn't – yet. I'm holding her when Phil walks into the kitchen.

Phil says hello and asks how I am in a low voice I think is intended to not wake the baby, but I soon learn this is his normal volume. He nods at my answer, then starts assembling breakfast for himself. He wears a long-sleeved white shirt with olive-colored lines that form little squares, dark blue Twenty X brand denim jeans, and what I'm sure is a hand-tooled leather belt, a common accessory on cowboys here. Five-foot-ten and slim, I know work-toned muscles hide beneath the sleeves, under the jeans. Lean is the word for him. A short-trimmed beard covers his chin, cheeks, and the space under his nose and travels up as sideburns to join his hair. Silver grows in equal proportion to brown on his chin, while brown maintains a stronghold on his cheeks. His eyes, which contrast sharply with his tanned and wind-burned face, are clear crystalline blue, the kind that actually shine. I learn later he is 45.

Quilla tires of me and begins crying, so Phil gently takes her and balances her on his hip while he stands before the stove, frying two eggs. He then sits at the far end of the breakfast bar – one of the few spots unoccupied – and eats while half-shouting questions to me over the boys' chatter. I move to stand closer; I can tell speaking too loudly is unnatural for him. He asks about my family, my husband, about my education, history, and this book project for which I'm visiting the ranch. Asking questions is second nature for Phil; he wants to know everything.

Phil says he is waiting for an important phone call (there is no cell phone service at the ranch) and he also needs to “do some paperwork,” which in rancher-speak means pay bills. He asks if I wouldn't mind letting the kids show me their chicks and baby goats while he stays near the landline. After an hour, I return to the kitchen, ready to see the ranch. Phil strides in wearing something I never expected: a baby carrier, the cloth kind that hooks in the back and allows the wearer to carry the baby in front, against the chest. Inside the carrier, baby Quilla sleeps; the blonde hair on top of her head is just visible. Phil loves taking his children along to do the ranch work, especially the babies because they tend to sleep well in the carrier. And with the baby out of the house, Jill can focus on homeschooling the other children. “At this age they spend more time with me than Jill,” he proudly says later.

Phil, baby Quilla, and I get into the blue Ford while Jesse and Jack scramble into the truck bed, which is littered with fencing material: a wire stretcher, barbed wire, a steel post driver, fencing staples, wire cutters. I am amazed because my family's ranch also has a '70s-era blue Ford that we have also designated as “the fencing pickup.” Fencing pickups are generally old trucks that are no longer reliable enough for highway use, and they serve the dual purpose of storing fencing supplies and transporting

people around the ranch. Dents, torn seats, low-functioning brakes, touchy gas pedals, and tricky ignitions are common. My family's fencing pickup left me stranded more than once.

We're off to do a trial run of a new portable water delivery system Phil has devised for providing water for the buffalo herd as it moves from one pasture to another. He's chosen a long rectangular steel trough to act as a water tank and welded it to an even larger flap of durable rubber, then attached a chain to the flap to act as a hitch. Now he can drag the tank wherever he needs to with the pickup. Whenever Phil needs something for the ranch, he first considers whether he can build it himself. If no piece of equipment exists to meet the need, then he often invents what he's looking for, welding it to life in the Quonset machine shed.

After building the water tank, Phil had to figure out how to deliver water to it. He bought thousands of feet of above-ground water pipeline made of a plastic so strong "a bulldozer could drive over it," he says. He cut two sections of pipeline for today's test run and fastened on special connectors so the pieces can be spliced together if needed. Extra pipeline wraps around a six-foot-high spool mounted on a trailer, waiting to be cut into sections and fastened with connectors. When the buffalo herd moves to a new pasture, Phil will connect the appropriate length of pipeline to the closest water well (there are several dotting the ranch) and then stretch the line to wherever the portable tank awaits.

Most conventional ranchers rely on one or more permanent water tanks scattered throughout sprawling pastures, as well as any natural water sources that exist on their land. This forces the cattle to constantly return to the tank for water, which limits their desire to wander too far away, especially during the hot High Plains summers. There are several reasons Phil needs a system that follows the buffalo instead of remaining stationary. One reason, but not the main one, is the current drought. It has been three weeks since the land received any moisture as either snow or rain, but the shortage is much more long term. The last summer and two winters have been dry – so dry that the growth on Phil's pastures was not abundant enough to support the bison through the winter, so he had to purchase supplemental hay. So dry that the entire region suffered prairie fires and failed crops. So dry that natural water sources on the land such as creeks, ponds, and dams have shrunk considerably; some are little more than a shallow pool. Unless the second half of May and most of June brings steady rain, these sources will disappear, and "We'll have to do some serious destocking by fall," he says, meaning he'll be forced to sell part of the herd.

The main reason Phil needs a portable water system, however, is not the drought. Droughts come and go in cycles on the Great Plains – a few years of plenty followed by years of want is the norm, although climate scientists have proven that droughts in recent years are more severe and long-lasting than in the past<sup>1</sup>. He needs this system because of the unconventional way he manages his pastureland and livestock, a way that actually insulates the land from the worst effects of drought compared with other ranchers' pastures. His is a way that encourages grass growth and soil health, that discourages

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1 According to the Natural Resources Defense Council, 11 states in the American West are growing hotter and drier at a faster rate than anywhere else in the nation and in some cases the world, with the root cause being global warming.

overgrazing, that treats the ranch and its soil, animals, and people holistically, and this sets him apart from the way the majority of ranchers operate. But before one can fully understand what Phil's method is, it's important to understand what his method is not – and it is decidedly not conventional grazing.

Conventional grazing, practiced by the majority of ranchers in the U.S., is understood generally as this: cattle are turned loose in large pastures and allowed to graze selectively using “free will,” choosing the plants they like best and leaving everything else untouched. Depending on the size of the pasture, cattle might be rotated weekly, monthly, or less often. Cattle perform well under conventional grazing; because they consume the most nutritious grasses, their body conditions improve and they rebreed easily. Operating under conventional grazing theory, ranchers have opted for large-framed cattle breeds hard-wired for big meat production, but these breeds have high nutritional requirements that can only be satisfied by selective grazing at low stocking rates (i.e., fewer numbers of livestock per acre), as well as with supplemental feeds and parasite control using chemicals. Conventional grazing can also include spraying pastures for weeds and applying chemical fertilizers.

Instead of conventional grazing, the Jerde Ranch practices holistic management, a theory of land management espoused by Allan Savory as he sought to understand and reverse the growing desertification first of Africa's grassland ecosystems, then the world's grasslands. He first offered holistic management and the Savory grazing method to the public in the early 1980s through journal articles and more comprehensively in book form in 1988, since updated, refined, and retitled *Holistic Management: A New Framework for Decision Making*. Savory's method is holistic because it accounts for the needs of the whole grassland ecosystem—soil, plants, insects, grazers, wildlife, people, everything that depends on the land for survival. Phil is really into Savory's work, and he mentions holistic management right away when I ask what makes the Jerde Ranch different from other ranches.

Holistic management is, at its heart, a decision-making framework, and Savory presents four key insights to guide land-management decisions. First, he says, land managers must realize that a holistic perspective of the ecosystem is essential. He writes that “we now realize that no whole, be it a family, a business, a community, or a nation, can be managed without looking inward to the lesser wholes that combine to form it, and *outward to the greater wholes of which it is a member...*in studying our ecosystem and the many creatures inhabiting it we cannot meaningfully isolate anything, let alone control the variables. The earth's atmosphere, its plant, animal, and human inhabitants, its oceans, plains, and forests, its ecological stability, and its promise for humankind can only be grasped when they are viewed in their entirety. Isolate any part, and neither what you have taken or what you have left behind remains what it was when all was one” (italics Savory's). A good land manager, in Savory's view, realizes that every decision has visible and invisible consequences throughout the environment, and no one action or inaction can fix or single-handedly create a problem.

Savory's second insight calls for a new way to classify environments: on a continuum scale from nonbrittle to brittle according to the evenness of precipitation and humidity distribution throughout the year and how fast vegetation decays. Seeing land on a continuum from nonbrittle to brittle explains

why environments react differently to the same forces, such as grazing. A nonbrittle environment, or a humid place where decay occurs quickly and rain is consistent, such as the tropics, responds well to rest or long periods of no grazing, while a brittle environment, or a non-humid place where decay occurs slowly and rainfall is erratic, such as America's grassland plains, turns into a desert when rested. Why? Conventional wisdom would suggest that arid or semi-arid land receiving inconsistent rainfall should be rested, not grazed. Savory says that in these brittle places, large grazers, not humidity, are the engine for nutrient recycling, vegetation breakdown, and keeping microorganisms alive during dry periods. Take those herbivores away, and the grass receives no fertilizer, insect and external microorganisms have no food, and no plants decay or are removed, resulting in stands of dead grass that choke out new plant growth. Desertification is the end result. As evidence, Savory points to brittle grasslands where managers reduced or even removed the livestock, and subsequently watched, confused, as the land grew even more barren.

The Jerde Ranch, along with all of western South Dakota, is a decidedly brittle environment according to Savory's continuum. Phil agrees this prairie needs grazers if it is to be healthy. He's frustrated, for example, about government-controlled land across the U.S. that either sits there with no livestock on it or languishes under poor management. "We can look at pictures where the government manages land and has excluded livestock for 60, 70 years that has turned to desert right across the fence from where cattle are, and there's still grass there," he says. "We would be better off if they'd sell the land and get people and cattle on the land."

A third and related insight from Savory involves the behavior of herding animals moving naturally in the presence of predators. While watching buffalo herds grazing in Africa, Savory noted that the spread-out animals walked gently and slowly, placing their hooves beside and not on top of coarse, inedible plants. They also placed their full weight on the soil, compacting it. By contrast, when the same animals were on the move finding another grazing area or fleeing predators, the impact on the environment changed: "I noted that while bunched as a herd, animals stepped recklessly and even very coarse plants, containing much old material that would not be grazed or trampled normally, were trampled down. That provided cover for the soil surface. In addition, the hooves of bunching and milling animals left the soil chipped and broken. In effect, the animals did what any gardener would do to get seeds to grow: first loosen the sealed soil surface, then bury the seed slightly, compact the soil around the seed, then cover the surface with a mulch." He claims the behavior of herd animals—grazing and compacting the soil, moving quickly and disturbing it—is vital to the land's health, not as harmful as it has been perceived to be. For livestock with no predators, herd behavior needs to be recreated by the rancher. Savory uses the example of attracting the livestock to "an edible reward that induces excitement and is consumed quickly," such as food, to replicate the bunching and milling effect. On the Jerde Ranch, this edible reward might be hay, tasty loose mineral displayed in a tub, or a white salt block for the buffalo to lick.

The fourth insight is where Savory departs most drastically from conventional ideas: he says



overgrazing is not connected to the number of animals in the environment, but instead to the amount of time the environment is exposed to the animals. Here, Savory is speaking about brittle environments, or the semi-arid to arid regions that cover two-thirds of the world. He considered the millions of animals that once roamed the African plains – many times more than the number of livestock animals now present – and how the wildlife enjoyed a plentiful environment. Yet once wildlife was replaced by comparatively small numbers of livestock, the grasslands began deteriorating. Experts, scientists, and government land managers insisted that the growing desertification was a result of overgrazing and overtrampling caused by too many livestock on pastures and too much wildlife concentrated within game preserves. Thinking the same thing, Savory once called for the culling of elephants and buffalo and ridding the African grasslands of livestock altogether. But even the research station plots he saw that were “properly managed” with few livestock still became mini deserts.

Years of thinking, reading, observing wildlife and livestock behavior, and testing grazing theories finally led Savory to conclude that time, not animal numbers, was the key to understanding grassland health. If livestock or wildlife keep returning to the same area without giving the plants appropriate time to rest, then the plants weaken, die, and are replaced by bare ground or unpalatable plants, desertification in action. A plant can also die because of too much rest if old vegetation is never grazed off to make way for new growth – this is why understocking can also cause desertification. Grasslands supported high animal numbers in the past because herding animals, bunching closely as they did in the presence of predators, would produce dung and urine in high concentrations on their grazing area. Animals do not like to feed on ground they’ve fouled with their own excrement, so they keep moving. As Savory discovered, “This meant that plants and soils would have been exposed to massive disturbance in the form of grazing, trampling, dunging and urinating, but only for a day or so, followed by a period of time that gave the soil and plants an opportunity to recover...Recovery times for soils and plants would have varied because there were so many different species feeding in an area and each was only trying to avoid the fouling of their own, or closely related, species, not necessarily that of others.” Implicit in Savory’s understanding is that having a variety of species present is also important for grassland health.

At the most basic level, Savory’s theory is much like rotational grazing—move the livestock frequently from pasture to pasture, grazing each area intensively for a short period of time and then allowing it to rest. But he claims that rotation alone isn’t enough, and his four key insights are only the beginning of this overall theory of holistic management. He covers the water cycle, the mineral cycle, energy flow, community dynamics, technology, money and labor, fire, rest, grazing, and animal health. An understanding of all of these, he says, is necessary to manage the grassland. He provides a framework for making holistically minded decisions and offers strategies to test and improve those decisions (Phil implements this advice by writing down new practices he tries and reconsidering them one year later). Savory remarks on financial planning, sustainability in resource use, society and culture, the uses of research, and effective policymaking. My favorite is the chapter titled “Cause and Effect:

Stop the Blows to Your Head Before You Take the Aspirin<sup>2</sup>.” It’s a book about grassland management, livestock, and desertification, but it’s also about living holistically no matter one’s occupation<sup>3</sup>.

Phil’s water project is an outgrowth of his belief in holistic management. Since he rotates the bison from pasture to pasture frequently, he needs a water source that also moves. “The model has been, scatter the livestock out across the land,” Phil says. “Well, then each well doesn’t have to produce very much, where we’re doing the opposite. We’re concentrating all the animals on a small piece of ground, so we need a lot of water for the short period of time that we’re there. It works really well because we have dams in every pasture, but unfortunately some are dry right now, so that’s why we’re doing this.” He juts his thumb back toward the water pipeline we’re dragging across the pasture. “I don’t need a lot of water in a dam to water a big herd for two or three days. But on a normal winter we’d have a little snow, we’d have a little run-off. Just the last two years we haven’t had any snow to speak of.”

Phil first learned of holistic management a decade ago at an informational meeting for ranchers held in Bison. It was a meeting that changed the course of the ranch’s future away from conventional grazing practices and toward sustainable ones. Phil tells me, “They said [at the meeting], ‘You won’t be able to read this book because it’s too boring of a read.’” Note: Savory’s book is more than 600 pages long in small type with few pictures. “And I got home, and it just answered so many questions that I was having. It didn’t take very long, and I read it, and I read it again. It was like a light turned on.” The meeting prompted immediate action. “One thing [the Extension educator] said, I remember he said, ‘Now don’t go home and start building fences.’ So we went home and started building fences.”

Fences are a major part of holistic management, particularly fences that divide large tracts of land into small ones. Phil rotates the buffalo through the small pastures every two or three days, grazing each section completely and not returning to it again for a year or so. Phil and his family play the role of the “predator” because they entice the bison to keep moving every few days, allowing them to replicate the way herds of large herbivores moved across North American grasslands before humans got involved. Herds of buffalo once migrated up and down the Great Plains, grazing hard as they went. Their herds sometimes numbered in the hundreds of thousands—anywhere they stopped would run out of grass quickly, so they had to keep moving. The buffalo did not have water tanks scattered over the Plains, so they were always on the move from one water source to the next. And after grazing an area along their seasonal routes, they might not return to it until the next year. Under conventional grazing, however, livestock must return to the same areas over and over during the grazing season, grazing the same

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2 I think this Savory quote is particularly insightful: “Instead of fixing what’s really broken or finding a fundamentally different path, we print more money, invent a new drug, make a bigger bomb, suppress or buy off dissent, or build a dam... think carefully about what might be causing your problem.”

3 As an example, Savory encourages all people to consider the effects of their daily actions: “Each day we put the utmost concentration and energy into our chosen tasks, seldom reflecting that we work within a greater whole that our actions will affect, slowly, cumulatively, and often dramatically. In our culture it is mainly philosophers who concern themselves with this larger issue because it is hard to see how individuals caught up in daily life can take responsibility for the long-term consequence of their actions, but they can. We can.”

plants without allowing adequate regrowth in between, and this has a completely different effect on the land.

To Phil, understanding livestock's impact on grassland is a matter of common sense and observation more than it is about Savory or the dozens of other books he has consulted. As conventional grazing advocates say, it is clear that livestock will eat choice plants first. But Phil and others realize that the animals will also eventually overgraze and kill the choice plants if left alone in massive pastures. To Phil, it's obvious that eating the choicest plants continually will kill them, a fact that is not always obvious to proponents of conventional grazing. It is also clear—because he used to manage livestock this way—that conventional grazing does not result in even mineral distribution, a.k.a. manure and urine, across a pasture. “Typically what happens in big pastures is the animals go back to the water source where they drink, lay down near by, stand up, pee and poop, and then they go out and graze again and repeat the process,” Phil says. “So what ends up happening is you move all the minerals from where they're eating back around the water. Under planned grazing, you end up with even distribution of minerals back on the land. When we drive across here, I want to see manure patties everywhere, even, which I think we're seeing.”

He motions toward the pee and poop evidence outside the pickup window as we traverse the pasture and, yes, there are manure patties plopped consistently over the land (I can't see the urine but I assume this is because it's all soaked in). We are working as we are talking: we hitch the portable water tank to the pickup, pull it to the pasture where the buffalo have been for about one week, go back and hitch up the portable waterline, and pull one end to the tank. I open any gates we encounter. “We got even manure distribution and whatnot in here, also urine,” he continues. “And then we'll be out of this pasture for at least another year. So, short duration, high intensity, followed by a long recovery.”

Though Phil allows the buffalo to graze small portions of the pasture intensely for a short period, to the point where ranchers would accuse them of looking overgrazed, his method has resulted in consistently thick, lush overall pastures. How? Overgrazing is less about what the grass looks like above ground and more about what its roots look like underground. Phil says, “Savory writes how you really can't overgraze a plant in three days. Overgrazing is a matter of time, not a matter of animal numbers. When a plant is grazed off, and it's starting to shoot up again like you see these plants out here”—he points to the shoots of grass as we drive by—“they're doing that on root reserves. Until they get big enough to where they have their solar panels out, they're all going to have to borrow energy from the ground.” He pauses. “There's a root die-off going on, is what's happening.” He means in the region, on the grassland as a whole. I can see from his expression that a root die-off is troubling. He returns to our conversation. “So if I continue to graze that plant off before it can get up and start harvesting solar energy again, I deplete that root mass until eventually I kill that plant. What Savory talks about is, three days' time is not going to be enough regrowth from that plant root in above ground growth to hurt the plant while it's actively growing.”

A pasture managed with conventional practices might look verdant each spring, but it's almost

certain the root mass underneath that grass is being depleted year over year because each time the grass launches new growth, livestock eats those shoots. This happens all summer long, year after year. The plant never has time to launch its “solar panels” to harvest more energy and restore what was taken from the root mass. It keeps growing, but on borrowed energy. Eventually the plant stops sending shoots to the surface because its roots are exhausted. That’s one reason pastures in the Great Plains are slowly becoming thinner, less diverse, more populated with weedy and woody plants, and more prone to drought and erosion—desertification happening before our eyes.