



A milkweed pod releases its seed.

A HARVEST WALK¹

Autumn is my favorite season of the year. There is a time during August when the scent from the maturity of plant life intertwines with the moisture in the air, and a cool shift in temperature says fall is coming. I like the feeling. In September, the leaves of the trees on the farms along the road are still green as are the lawns, but the late-variety apples are finally maturing. They are firm and cold. While taking a walk at Velma and Verle Howard's farm, which is a mile from where my parents live, I reach for one and take a bite. It is crisp, tart, and juicy. I feel alive. The caw-caw-caw chorus of the crows resounds across the grove. The large birds sit high in the cottonwoods, ash trees, soft maples, lindens, and elms. The leaves on a few trees are turning color and beginning to fall. The wind blows them in gentle somersaults, whispering across the green grass and down the lane. How long before the entire countryside turns to the monochromatic color scheme of winter? We cannot predict the precise timing nor control the process, but the change happens as summer makes its metamorphosis into the landscape of winter.

In the midst of the transformation, this road is quiet. Farmers are in their machine sheds readying their combines to harvest the corn and beans while the crops continue to mature and shift color. The corn stalks are a weave of green and dirty beige; the silks at the end of the ears are burnt brown, coarse, curly, and tangled. The whitish husks are beginning to loosen, revealing full, yellow, dented kernels. The bean plants are turning rusty brown, their leaves drying, curling, and shrinking. The pods that have been hidden in the mass of green foliage during the summer are clearly visible. A farmer can measure the size and count the number of beans in a pod to predict the yield per acre. Even so, no one knows for sure when the first hard frost will come and the growing season will end.

As I walk down the road with my camera, the gravel crunches under my feet. The sky is a dense blue, and there are only a few wisps of clouds. The air is fresh and cool, making my cheeks red and causing my nose to drip; but there is also a glow from the sun, and I feel cozy in my wool sweater and Pheasants Forever jacket. There aren't as many pheasants in the county now as when I was a child, so I delight when I see a rooster dart out of the road ditch, flutter its wings as it takes off, and then glide across the field. Its body is crimson and gold; its neck is radiant green with a white ring around it. Its piercing warble-gobble is a gift to my ears as I reminisce.

In the ditch there are milkweeds whose pods have hardened and opened, releasing a spray of white angel hair with brown, almost heart-shaped seeds at the end of each strand. The wind blows the seeds apart, and the strands of silk shine in the sun like soap bubbles blown by a child. In some sections of the road ditch, there are native prairie species that have survived the march of modern agriculture. The big bluestem is the most noticeable, their purple-blue seedheads shaped like turkey feet swaying in the wind. The bronze plumes of the Indiangrass are smooth. The Canada wild rye plants are nearly white, as though they have been bleached by the sun. Their kernels are full and their whiskers are brittle and long. I look low and see the wild roses. Their thorny stems and small leaves are dull in color and almost hidden, camouflaged against the ground; but the red, round rose hips are distinct. When winter settles in, they will shrink and some will turn dark.

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Iowa is the only state that once was covered predominantly by tallgrass prairie. In fact, 85 percent of the state was made up of prairie. Today, less than one tenth of 1 percent (.001) of that prairie, with its rich biodiversity, continues to exist. It has been tilled to create a monoculture of row crops, mostly corn and soybeans.

Soon the combines, tractors, and wagons will come to the fields, and there will be weeks of work. In a normal year, the soybeans are harvested first, then the corn. There will be fluctuations between mild and harsh weather. There can be delays if there is very much rain and the fields become too muddy for the big machines.

The Machinery of Harvest

I like harvest and the activity of combines. I like seeing the tractors headed for the fields, returning with wagons of corn and beans behind them. The pattern of farmers and their harvest machines is much like the activity of ants in their colonies. There are many varieties of tractors on the farm-to-market roads. The huge, new green ones with their double sets of rear tires are taller than I am. They are monstrous machines and able to pull two monstrous wagons at a time. There are also older tractors and wagons. Often the farmers get out their utility tractors, the ones that are not modern but can help with the harvest. These old tractors have trouble pulling the big new wagons, but they can pull the older *barge wagons* with rectangular wooden sides. These are the kind of wagons Dad had from the 1950s through the mid-1970s when he retired from active farming.

The Model M Farmall

My favorite tractor is the International Harvester Model M tractor. Several of the farmers in the area own one. The M is the most endearing model of the Farmalls and was made from 1939 to 1952. The name Farmall meant that the line of tractors, with the appropriate implements, could do anything a farmer needed: plant corn, cultivate, pick corn, mow and stack hay, pull a three-bottom moldboard plow, and shovel manure or snow. The Farmall does not have a good name in all circles of historians. Some say that the Farmalls caused the Dust Bowl because farmers were able to use the tractors to plow up marginal land — land that never should have been tilled — on a large scale.

The wheels on an M are in a tricycle configuration with two 11-inch-wide and 38-inch-tall treaded-rubber wheels in the back and two knee-high wheels side by side in the front. It is open-aired with no glassed-in cab, leaving the driver exposed to the elements of the weather. The seat is shaped like that of a horse-drawn implement and rests on a coiled spring to cushion any jarring motion of the tractor. The steering wheel is a black circle connected by three steel rods, like three-way spokes, to the long steering column that is partially visible along the top of the body of the tractor. Farther toward the front of the tractor, there is a silver-colored exhaust pipe that stands straight up from the top of the body.

The Ms that farmers have now are faded and rusty unless they have been restored to their original color, a cross between deep cherry and fire engine red. They are a common and popular attraction at parades and antique farm implement shows. An M cost \$1,000 when it was new and sells for that much at auctions today. The M is designed with 25 horsepower, but it may have a capacity of up to 30 horsepower. That is small compared to the John Deere Model 8200 tractors that I see along the road today. These new green machines have 185 horsepower.

Essentially, the Model M Farmall is a grand, beautiful, red machine with simple lines that has accomplished many functions of farming very well. I love an M about as much as I love the draft

horses that it replaced. The M isn't used much today. Harvest is its biggest season. It might be used to haul wagons of grain, but these days it is more likely that a farmer will park an M at a corncrib or grain bin and use its power takeoff mechanism to drive the auger systems. An *auger* is essentially a long, metal cylinder for conveying grain from one place to another. Inside the tube is a rotating helical shaft. As the shaft turns, the grain is spirally pushed to the end and falls into its next destination such as a larger wagon or a bin for storing the grain.



Helen on Paul Harrold's Model M Farmall he bought from Irving Cornwell in the 1970s. Self-portrait with help from Denny Goodrich, 1995.

Grain Wagons

Often I would help with harvest, driving the M that we inherited from Grandpa and pulling a barge wagon full of harvested grain from the fields to the farm. One of those wagons carried up to 150 bushels of grain. To unload it, a person had to drive the tractor across a mechanical elevator system and stop with the front tires of the wagon on the lift or use a hydraulic elevating device built into the wagon. This device lifted the front end of the wagon high so the grain could pour out the back through a tailgate that the operator slid open to regulate the flow of grain. The grain would rush down and out from the wagon into an elevator or auger system that would carry it to the top of the appropriate storage units. There are still some of these wagons around, but there have been radical changes in wagons as well as tractors.

The top of a barge wagon comes up to my eye level. It is fairly easy to climb into one and stand on the flat bottom of the box. In contrast, the *gravity wagon*, which has replaced the barge wagon, is ten feet tall. The most popular size carries 600 bushels. These wagons also have four wheels, but the wagons don't need to be elevated to unload the grain. They are rectangular at the top, but at the bottom center, between the front and back wheels, they are shaped like an upside-down pyramid or large, angular udder. To unload the grain, the farmer steps to the side of the wagon

and turns a thin, metallic wheel the size of a captain's steering wheel, which opens a sliding metal panel. The grain comes rushing down a chute into the conveyor device that carries the grain away to be stored.

Another popular development is the large grain cart that holds up to 1,000 bushels. It has a built-in auger system but only one set of wheels, tall ones standing five feet high. The wagon is rugged, and the person hauling grain can drive the tractor and cart alongside the combine, allowing the combine driver to unload grain into the cart while on the move. Later, the cart can be pulled up alongside another wagon or truck or at a storage site where the auger can be swung out to unload the grain. In comparing costs, a set of wheel rims and tires for today's cart wagons costs \$2,500 compared to the \$250 that a farmer used to pay for the running gear and box of a barge wagon in the 1960s and 1970s.



Gary Dahl in the cab of his combine, unloading corn into a grain wagon, 2003.

Combines

The first combine was built in the 1830s. It got its name because it was a combination of a horse-drawn reaper and thresher. It was primitive compared to today's combines, which are rolling factories that move through the fields at five miles per hour. These huge self-propelled machines are like army tanks, but they are shaped much differently and ride on large wheels with rubber tires. The driver sits in a glass-enclosed cab with cushioned seat, fingertip controls, air-conditioning, heater, and radio and looks forward and down at the cutting mechanism. If it is harvesting beans, a bean platform or head will be mounted on the front of the combine. If it is time to pick corn, the farmer has to spend one to two hours replacing the bean platform with a cornhead.

When I was a child, the corn was harvested with a corn picker, either mounted directly on a tractor or pulled by a tractor. The corn was harvested by the ear, meaning the picker tossed the whole ear into a wagon that hauled the load to a corncrib where the corn was stored for drying during the winter. In the summer, farmers would gather at a farm, unload the cribs, and put the corn through a big, stationary machine called a *sheller* that took the ears apart, sending the yellow grain via an auger to a wagon or truck, and making a pile of red cobs and one of yellow-white husks.²

In the first half of the twentieth century, combines were limited to harvesting small grains such as wheat and oats. They were also used to harvest soybeans, which were first grown along my road in the 1930s. However, in 1955 John Deere introduced the first *cornhead*. The cornheads on today's combines have a set of shields resembling giant metal fingers that extend low and to the front of the machine as they glide through the rows. These shields cover the complex rollers and chains that gather the corn stalks in, bend them down, snap the ears off, and guide them into the belly of the combine. There the husk and kernels are stripped from the cob. The kernels drop into a pan, are cleaned, and then are elevated to a 200-bushel tank that sits above and behind the driver. The whole process, from when the ear is ripped off the stalk until the grain lands in the tank, takes a mere twenty seconds. The tank can fill up in eight to ten minutes, and the combine can harvest 2,500 bushels an hour. Eventually the corn moves through an auger, which extends to the side of the tank. The long cylinder is about one foot in diameter and some 12 to 18 feet long. When the grain reaches the end of the auger, it drops like a golden waterfall into wagons or trucks. The vehicles will then carry the treasure from the field to metal storage bins on a farm or to the farmer's cooperative elevator in town. The rest of the plant that was drawn into the combine is chopped into pieces and propelled out the back of the combine by the rear beater and fanned across the ground.

After a combine moves through a field of soybeans, it leaves behind stubble shorter than three inches high and rows that are relatively clean and easy to walk through. A cornfield is different. The cornhead on the combine leaves taller and thicker stalks that are bent over and easy to trip on. I prefer walking in the cornfields. I carry my camera and look for the right spot for a photo. I lift my feet high so I don't trip. The stalks crackle and rustle with each step. As I establish my position at a safe distance from the path of the combine and wait for it to come into my viewfinder, I feel the ground solid under my hiking boots. There is a smell of ripeness that I find hard to describe. My agronomist friend at Iowa State University, Stan Henning, tells me that it comes from the actinomycetes, a kind of organism in the corn stalk and the earth.

V-rippers

When harvest is over, there is still work to be done. The corn stalks need to be chopped and the ground plowed with a *V-ripper*, an implement consisting of large tillage knives mounted behind a tractor. Unlike the days when Dad and Grandpa farmed, few farmers today use the old moldboard plows that turned the stubble and earth over so that the field was completely black. Farmers took pride in how black their fields were after they finished plowing. In fact, it was a sign of a less than competent farmer if any stubble or other plant debris was visible when the plowing was done. That style of plowing exacerbated the erosion of Iowa's topsoil; it opened the ground up too much, exposing it to high levels of oxygen that depleted the organic nutrients of the soil. Disking the fields was another common tillage practice that has been significantly reduced in recent years. The problem with disking was that it compacted the ground, and subsequently reduced crop yields.

2. Some of my understanding of the technology of a combine is based on a newspaper article by David Hendee, "Corn off the Cob, 20-Second Process," *Omaha World-Herald*, 4 October 1995, page 11, Focus Section.

Wildlife

If I am lucky, I may see a jackrabbit bounding across the field. The wildlife is never close enough to photograph, so I don't try. I simply say, "Hi, Mr. Jackrabbit" and watch him dart across the field in a jerky, zigzag pattern like a cartoon character. Then again, I might hear honking and look up to see a squadron of geese migrating south. Other times, a dark cloud will rise out of a field. It is a fluttering flock of blackbirds that have been startled and are moving to another part of the field in search of grain.

As I look across the cornfield, I see a family of three deer. They have regular routes between the water at Crooked Creek to the north and Lizard Creek to the south where bits of grain have fallen to the ground in the open fields. If I hadn't come along, the deer would gradually have moved to the road and crossed it. Now they stand frozen, eyeing my car. As I drive slowly west, they begin to run ahead of me and parallel to the road. They then take off across the field away from me, running, springing, and leaping with their white tails bobbing. They are graceful and majestic like stars of a ballet. I watch them until they are out of sight behind a rise in the field and the lone building, a corncrib, on one of the seven abandoned farmsteads along my road. I get out and stand by my car, enjoying the quietness of the countryside.

Over nine-tenths of the tillable farmland in Pocahontas County is used to grow corn and soybeans. They are the cash crops, the underpinning of the economy, but there is no adequate protection for wildlife during the winter in the farm fields. When farmers burn the road ditches after harvest for weed control and to reduce the possibility of large snowdrifts on the road, there is even less habitat for the pheasants, rabbits, and deer.

Growing Wheat by Hand

In the spring of 1994, I planted 400 square feet of wheat by hand on an abandoned farmstead I own six miles from the road where I grew up. The place was part of the land that I inherited from my grandfather's estate after he died in 1956 when I was in sixth grade. The project was an experiment with poetic motivations. I hoped to at least be able to bake a loaf of bread from wheat I had grown. I used a hand sickle to harvest the wheat, cutting the stems at the base of the plants. I laid the plants to dry in a pile in a cardboard box in my father's machine shed. Later I took them to my apartment. I made a flail from two pieces of wood tied together with some clothesline and beat the wheat to loosen the seed. I put a pile of seed, hull, and bits of stalk into a five-gallon plastic bucket, stood outside on my deck in a strong wind, and poured the mixture into another bucket. The idea was to let the wind blow the debris away while allowing the wheat berries to fall into the second bucket. I repeated this winnowing process several times, but I still had refuse left in my bucket. I sat down at a table and picked the kernels out by hand. It was tedious. The result was three 10-ounce jelly jars of wheat. I decided to quit and give the rest of the plants to friends to use for decorative purposes. I packed one-ounce samplings of the grain in small plastic bags and gave them as party favors at a dinner for my 50th birthday. I have yet to grind the bit that I have left and make a loaf of bread.

Appreciating the Fields

Today, there are many variations of no-till and other conservation tillage systems, all largely dependent on heavy uses of chemicals. The chemicals can be applied either in the fall or spring. Many farmers take advantage of special price offers in the fall and have the fertilizer application out of the way so that the job doesn't encroach on planting time in the spring. After combining and doing whatever tillage is necessary, a local farmer arranges with the co-op to have fertilizer and ag-lime applied to the fields. The lime improves the soil's alkaline-acid balance that is thrown off by the heavy use of nitrogen fertilizers.

At the tail end of the season, as I drive along my road, I see tractors in the fields pulling white anhydrous ammonia tanks or the tall, funny-looking, three-wheeled, monster-shaped trucks on large balloon tires. The total width of the track made by these flotation tires is 11½ feet. With that much solid rubber meeting the ground, there is little pressure per square inch and less risk of compacting the earth. When these vehicles with brand names like Terragators finish their work, the land lies fallow for the winter, but much is happening in the soil during that time.

A well-managed field is like bread dough that contains yeast and is kneaded and left to rise before being shaped into the loaves. The soil and dough are both aerated and alive. The difference is that the fallow ground rests in a suspended state of activity during the winter with conditions more like a refrigerator or freezer than the warm spot in the kitchen where the bowl of bread dough sits.

There are billions of minute creatures in a couple of scoops of soil, and there is a cycle of consumption. The molds and fungi begin to eat the crop residue, but the debris has little nitrogen in it. So the bacteria begin to digest the inorganic nitrite of the anhydrous ammonia that the farmer



Plowed field, snow, and Caterpillar tractor tracks near the road, 1996.

has applied and convert it to organic nitrates. After devouring all the nitrogen sources that are available, the first round of organisms dies and is consumed by larger creatures. This cycle of devouring and being devoured builds the level of organic nitrogen in the earth so that the new spring plants can assimilate them with average yields of 51 bushels of beans or 163 bushels of corn per acre for Pocahontas County.³ Creatures that are large enough to move between the layers of the soil, such as insects, earthworms, centipedes, and millipedes, aerate the soil. They move to the surface to obtain organic material, and then take it down deep, leaving vertical holes that allow air and moisture to sink into the earth.

When the temperatures drop below freezing, the frost creates a beautiful, crystalline look, a white dream dust that sparkles on the landscape. The sky to the south is dapple gray with a thin, hazy blanket of clouds merged together with silver dimples. The light is diffused, and the sun is an eerie, pale yellow sphere with soft edges in the dull sky. To the north, the sky is dark and steel colored. The fields have been sheared of the crops that they bore during the summer. At the farms down the road and those across the section, all the trees except the evergreens have lost their leaves. The landscape is a simple monochromatic juxtaposition: fallow fields, brown trunks and branches, and a somber sky. As the wind picks up, the clouds begin to separate and move. The sky becomes stratified, a mixture of light and dark clouds interspersed with bands of blue. The temperature drops again, and the first winter storm starts moving in from the west.

I love fall. I love the harvest. Since I own land inherited from my grandparents and given me by my parents, I profit from it financially. But I also wonder about the cost. What is the long-term effect of having a system that jeopardizes the natural ecosystem of the rural landscape to such an extreme degree? I also wonder about the effect of modern agriculture on rural neighborhoods. For instance, it is hard to ignore the inverse correlation between the trend toward even larger farms and the population of Pocahontas County. I have no easy answers; instead, I have mixed feelings of nostalgia and disenchantment, love and disdain as I walk along the road where I grew up. The feelings are strong, and the inner wrestling match seems overwhelming at times. Being in the country is part of my salvation, but it also disturbs me. I like being there with my camera and observing the combines moving through the fields and the tractors and wagons carting the grain down the road. I enjoy breathing the cool air and stopping at my parents' retired neighbors. Often they serve me a cup of coffee and a dish of apple crisp at their round oak table. However, part of me wonders how much I should accept the status quo agribusiness and how much I should try to change it. Then the big question hits me — the one I would just as soon avoid — and it stares me in the face: "Is it possible to alter the system of Iowa row crop agriculture and its lack of ecological diversity, or must it roll on, even if it has reckless consequences for the natural community and the people community, before future generations of farmers and the public at large come to their senses and insist on change?" That is the kind of winter that scares me.

3. Pocahontas County farmers averaged yields of 50.6 bushels of soybeans and 162.7 bushels of corn in 1994. From the Iowa Agricultural Statistics. State Statistician: Jim Sands, 210 Walnut Street, Suite 833, Des Moines, Iowa 50309-2195. <http://www.nass.usda.gov/ia>

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