

# THE SURVEYORS

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In early June of 1981 I had taken steps to realize a lifelong ambition by signing a contract to purchase an eighty-acre farm near the town of Three Oaks in extreme southwestern Michigan. The farm contained a small white 1860s farmhouse which my wife Andrea looked forward to making into a cozy weekend retreat, a red barn and several other small outbuildings, thirty acres of corn planted by a local farmer who rented the tillable land, and--best of all (to my thinking)--about fifty acres of woods and ravines which adjoined a state park containing another several hundred acres of woods.

Our closing and possession date for the farm were, by agreement with our seller, dependent upon the tenants of the farmhouse moving to new quarters. The seller, probably assuming that anyone who could afford to buy his farm would not want to live in the charming but somewhat dilapidated farmhouse, had only recently rented to the tenants and wanted to give them a decent interval, which he subsidized, to find another house. Country landlords are not cut from the same cloth as city ones.

In late July, probably as a result of my city-bred impatience, the seller agreed that he would see that the tenants were out by mid-August, and we set a closing date for August 17. I immediately contacted my brother Rick, a small-town lawyer in the Humboldt Bay region of northern California, who, although hopelessly shorn from his Midwestern roots by fifteen years in the ethereal wonderland of California, was as excited about the new acquisition as I was. He was also helping me finance the purchase. We decided to arrange our schedules to take at least a week of vacation together in August, and he made reservations to fly to Chicago on August 16 so he could be in on the beginning of the venture. We had no specific plans as to what we would do at the farm; I knew only that there was more than enough work

to occupy twenty hardened farmhands for a week, let alone two soft lawyers.

On August 15 I called the seller to make sure the tenants had left the house. He advised me that they had found a new home, but he wasn't certain they were quite out of the old place yet. Having waited for over two months, and having already arranged my week of vacation, I was in a frame of mind to interpret the situation optimistically. We agreed to go ahead and close the purchase on August 17 as planned.

Rick arrived on schedule on August 16, and bright and early on the 17th he, Andrea and I set out from our house in Glencoe, down payment check in hand, bound for Three Oaks. We arrived there mid-morning and took a slight detour en route to the Three Oaks office of the seller's lawyer to drive by the farm. A big diesel semi-trailer tractor sat in the driveway, engine growling. We knew that the tenant drove a truck; obviously he was not gone yet. Disappointed, we continued on to the closing.

Our seller apologized profusely for the tenant's continued occupancy. He had arranged for us to get in the house briefly to take some measurements and hoped that we would have possession soon. We went ahead and closed the purchase, the unavailability of the house that day casting only a small cloud over our enthusiasm.

We went back to the house for our short visit. The tenant's truck was gone, but his wife was there. She told us of *her* problems in getting their new house cleaned up and fit for themselves and their small children. We said we understood and left, asking her to let us know as soon as she had moved.

Although the house wasn't available, the rest of the eighty acres was. We decided to use the rest of the morning to look around. The logical place to start was the woods because the fields were full of corn.

Elm Valley Road runs along the south border of the farm. The farmhouse is located near the road at the southeast corner of the property, and the woods begin next to the road at the southwest corner. The entire west boundary of the property, half a mile long, is shared with a state park which preserves one of the few remaining stands of the virgin beech-maple forest that covered the area before the pioneers came. We parked the car near the southwest

corner of the farm and merrily entered the woods.

We hadn't gone ten yards before we realized that this excursion wasn't going to be a lark. We city dwellers weren't prepared for the dense foliage of a middle-aged woods in midsummer. The idea of a pleasant stroll evaporated as we picked our way slowly through the underbrush, constantly seeking the route that offered the fewest obstacles and taking care that the branches we were bending to pass by did not slap back into a follower's face. My respect for the pioneers who settled this part of the country increased. Traveling ten miles in a day through this tangled greenness would be an enormous achievement.

We pushed on through the underbrush, congratulating each other on our fortitude in carrying on through such adversity. And the effort was rewarded. Less than two hundred yards into the woods we came upon one of the several ravines that cross the property, carrying the natural drainage to the Galien River less than a mile away and thence to Lake Michigan. This ravine was some twenty-five feet deep and at least a hundred yards across with steeply sloped sides. Though hardly the Grand Canyon, it would have been impressive in any flat Midwestern environment. Set in the middle of a dense woods, visible only from close range, it was indeed spectacular. The pride of ownership of this wonderful view swelled within me.

We proceeded along the edge of this ravine, still fighting the thousands of saplings and bushes, until we came upon an even more striking sight. The ravine we had been following intersected with another ravine and at the confluence created a massive new ravine, which at this point was nearly two hundred yards across. The new ravine then turned in what appeared to us to be a northeasterly direction, so we moved away from it and back into the woods upon what we believed to be our original northerly course.

After another fifteen minutes or so of creeping through the brush, I began to think about retracing our steps and returning to the car so we could find a nice place to have lunch. I said to Andrea, "You must be getting pretty tired hacking through all this undergrowth. Would you like to turn back now?"

"It's not really so bad," she said. "I could go on a little further." I had to admit that

she didn't look particularly winded. "How about you?"

"Well, I could go on all day, but I don't want you to get too tired."

"Whatever you want," she responded diplomatically. So we turned and started back for the car. After a very few minutes we all realized we had a problem.

It was simply impossible to tell which way we had come. The woods looked the same everywhere, and we had lost the ravine to guide us. It dawned on me that I wasn't even sure we were still on our own property. Very possibly we had wandered into the state park.

Fortunately it was a sunny day. Rick proposed that we use the sun to guide us back, and this we did though not without some uncertain moments. Not being precisely sure where the sun was in relation to true south, our return course could only be approximate. We did not pass by any of the landmarks we had seen on our way into the woods and finally came out to the road--from the park, as I had suspected--several hundred yards to the west of our property line. Greatly relieved, we drove into Three Oaks to have lunch.

While enjoying a hamburger at the Waddle Inn we discussed what we could do until the tenants left. Andrea was disappointed because she had planned to spend all her time cleaning the house and getting it ready for us to occupy and didn't see much reason to come to the farm at all until she could get started on that job. She decided that she would stay in Glencoe in the meantime. Thus Rick and I would have to drive over and back every day to do whatever we were going to do.

Although he and I didn't look forward to four hours of driving each day, we had planned to spend a week at the farm and by God we were going to do it. But what could we work on without the house to use as a base of operations?

Without any resolution of this issue, our conversation turned to our walk in the woods. We recalled stories about Indians blazing trails and hunters wandering in circles through the woods, and fairy tales about children lost in enchanted forests. All these took on new meaning.

"I've never really thought of a woods as a frightening place," I said, "but I did feel a little panic out there for a moment or two."

“And we were never really that far from the road,” Rick added. “It’s not like we were in the middle of Sherwood Forest.”

“Do you suppose that if you spent enough time there, like Robin Hood, you would always know where you were?” Andrea asked. We agreed that this probably would be the case.

“You know what we should do?” Rick said. “While we’re waiting to get into the house, we should get out in the woods and try to identify some landmarks.”

“That’s not a bad idea,” I said. “We could start with locating and marking the property line between the farm and the state park.”

“Great,” Rick replied. “But how are two lawyers going to go about that? They didn’t teach me surveying in law school.”

“Hey,” I persisted. “I’m sure we can figure out how to do it. And Dad would be proud of us.” Our father, whose modest estate had made purchase of the farm possible, had spent a good part of his career as a civil engineer.

As we drove back to Glencoe that afternoon I thought about how we might locate a half-mile long property line in the middle of a woods. My first thought was to use a surveyor’s transit. Although I had never laid hands on one, perhaps they weren’t difficult to operate. We arrived home before five o’clock so I made some telephone calls to likely-looking firms listed in the yellow pages that might have transits. Some of them did, but unfortunately none of them were willing to rent the instruments. They further thought it unlikely that anyone would rent them because they were so delicate. I could buy one if I was willing to spent close to a thousand dollars, but that was clearly out of the question.

I thought some more about the problem. The property line we wanted to locate ran directly north and south. So why not just use a compass?

“Magnetic north on a compass isn’t usually true north,” Rick pointed out when I ran the idea by him. “And how are you going to take a sighting through half a mile of thick woods with any accuracy?”

I went to the Glencoe library after dinner that evening and found magnetic declination

tables and maps showing how far a compass reading deviated from true north in different parts of the country. Surprisingly, the zero-degree declination line ran extremely close to the farm.

Rick and I then visited my favorite hardware-sporting goods-toy store in Northfield. Fortunately it was open until nine o'clock that evening. They carried, for less than ten dollars, a plastic "lensatic" compass that had little sights that folded up from each side. Confident now, notwithstanding Rick's continued skepticism, that we could do our surveying with a compass, I also bought a pruning saw, a long handled clippers, and other tools for clearing a path through the underbrush. The tools included, on impulse, a selection from the toy department of two eighteen-inch long "machetes" that looked wicked but had an edge about as sharp as a table knife and cost only three dollars each. I asked the clerk to identify the lot as "forestry supplies" on the Master Charge receipt.

One more step was necessary. I had to be certain that when I sighted north on the compass it was located directly over the property line. I therefore attached the compass (by glueing on Velcro fasteners) to the top of a wooden stick that reached from the ground to eye level, and I taped a small level to the side of the stick so I could keep the stick from leaning away from the property line when I made my sightings. I also prepared another tall stick to aim the sights at.

"This is all very ingenious, if a bit slapdash," my brother said. "But how are you going to mark the property line even if you find it?"

Another shopping excursion was necessary. Early the next morning I went back to the hardware store and bought three thousand feet of white nylon cord. I then drove to Arlington Heights, to one of the surveying supply stores I had called the day before, and purchased fifty marking flags consisting of long wires with brights orange squares of plastic material attached to the ends.

The tool kit complete, Rick and I drove to the farm, arriving in late morning. We went straight to the southwest corner of the property, parked just off the road, put on our hiking boots, and entered the woods where the farm and park adjoined.

A dilemma confronted us right away. There was a white L-shaped sign placed by the Michigan Department of Recreation marking the edge of the state park and advising that hunting was prohibited. But a good five feet to the east were the remains of an old fence running parallel to the property line. Which actually marked the edge of our property?

Placing implicit trust in the competence of state officials over that of unknown predecessors in title, we chose to use the state's marker (which also happened to give us five feet more property). I set up my makeshift transit at the state sign and had Rick walk to the north with the sighting post. Because of the thick growth, he couldn't go much more than twenty five feet without disappearing in the foliage. Even at this distance he would have to wave his stick back and forth for me to spot him. He tried to clear the way a bit with one of the machetes, but it seemed to bounce off the branches and twigs without having much effect, so he used the clippers to chop off the most offensive branches. "I'm sure glad we brought this machete along," Rick said. "If we meet any dangerous animals, we can club them with it."

While I was trying to take my first sighting, Rick, standing impatiently holding his stick, had a new complaint. "If we have to take a new sighting every twenty five feet, we could be way off by the time we get to the end," he said.

"Maybe all the sighting errors will cancel each other out," I replied optimistically. Rick looked unconvinced, but was willing to proceed.

I would squint through the sights on my compass and tell Rick to move his sighting stick to the left or right until it lined up with the north-pointing needle. He would then mark the spot with a flag and I would move up to the flag for another sighting while he moved further northward. After we had done this a few times, we would go back and unroll the white twine along the line we had so marked. We then picked up our flags (leaving a few in case something happened to the cord) to use over again.

After doing this for a hundred and fifty yards or so we came to the edge of the first ravine we had admired the day before. Our property line seemed to go straight along the edge of the ravine for about a hundred feet, at which point the ravine bent slightly back to

the east. Just beyond this turn we ran into some more remnants of an old fence line. Here there were few posts; instead, the barbed wire had been attached to a line of trees. The wire was obviously very old; in some places it was imbedded deep inside the trees which had grown around it.

Curiously, the new fence remnant was also about five feet to the east of the line we were laying. Had our precursors who put in the fence been off consistently by five feet the whole length of the property? Somehow it seemed unlikely that they would be so far off the property line if they had tools sufficient to be that consistent. Or had we strayed five feet by our crude surveying system? I just couldn't believe we were off that far. When I sighted through the compass I could detect whether the sighting post was only a few inches off line. Even making sightings every twenty five feet or so it was unlikely that we would be off by five feet over two hundred yards. This raised in my mind the distinct possibility that it was the old fence, and not the state park sign, that was on the property line at the beginning.

Rick and I decided to go back to the road and look the situation over again. It was way past time for lunch anyway, and the sandwiches we had brought were still in the car. We followed our cord back to the starting point. While Rick got the food, I walked across the road to see if there might be a property line marker on that side that would give us some guidance. Our farm constituted half of a quarter-section, and the property line we were locating was the line that ran down the middle of the section. The south boundary of the section was Elm Valley Road, but possibly the section to the south of the road was divided in a similar manner. There were, however, no fences or other boundary markers there at all.

As I walked back across the road I noticed a small circular metal plate in the middle of it. I called the plate to Rick's attention.

He stood over the plate and sighted east, then north. "You know what I think?" he asked. Answering his own question, he continued, "This plate is exactly in the middle of the road, so it must be right on the section line. I'll bet this is a half-section marker they put in when they paved the road. And it lines up with the old fence."

"There's an easy way to check that out," I replied. We got in the car and drove east



half a mile to an intersecting road that I knew was on a north-south section line. Sure enough, there was another metal plate in the middle of the intersection. Half a mile further along there was another one, marking the half-section again.

We went back to our woods and quickly finished lunch, satisfied that we had positively identified the southwest corner of our property, but disappointed that we had to redo the morning's work.

We then started again, this time taking our first reading from the marker in the road. The remnant of old fence turned out to be exactly on the property line. Resisting the temptation to just lay our new line five feet east of the old one, we repeated our sightings as a check of our method. We were pleased to find that we stayed approximately the same distance from the first line for its entire length. Either we were repeating exactly the same mismeasurements, or our method was working.

We passed the point where we had stopped before and continued our sightings. The line of barbed wire imbedded in the trees was also right on the boundary. Here one could see a decided difference in the growth on the two sides of the line. Trees on the park side were uniformly larger than those on our side. Our property had undoubtedly been used for crops or pasture at one time, then abandoned to be reclaimed by woods. I suspected that with closer examination a lot of history could be read from these trees.

After another two hundred yards or so we suddenly came upon a huge ravine that directly crossed our path. This was undoubtedly the combined ravine we saw the day before that we thought ran slightly to the northeast. In fact it ran west-northwest. No wonder we got so lost; we had misdirected ourselves by about ninety degrees.

We descended the steep bank gingerly, still taking our sightings. The bottom of the ravine was a different world. Though there were still many trees, they were less abundant. Much of the ground was slightly marshy, even though it hadn't rained for a week, and there were large patches of grass and reedlike plants, four or five feet tall. These at least succumbed to the dull machete, or we couldn't have gone through.

Another problem faced us. The occasional mosquitos of the woods above the ravine

were replaced by swarms of the pesky creatures. The repellent we had dabbed on our faces and hands before we started had been washed away with sweat, and our light shirts were not enough to stop these voracious hordes. It was now late afternoon and we were tired, so we decided to retreat and call it a day. We followed our cord back to the road, packed our gear and drove home, stopping only for some well-deserved McDonald's quarter-pounders.

We returned refreshed the next morning, armed this time with a supply of not only insect repellent spray but little bottles of pure DEET that we could easily carry with us. We also had donned heavy cotton long-sleeved shirts. Being a little too warm was vastly preferable to dozens of mosquito bites. Fortunately the temperature was predicted to stay in the upper seventies.

This time we had also persuaded Andrea to come back with us to observe the technical excellence of our work. She brought her younger son, Bill, then fifteen, who was eager to help us in attacking the wooded enemy. After ascertaining that our house was still unavailable and would be for a while we all went directly to the woods. Rick and I proudly explained how we had found the half-section marker in the road. Andrea was properly complimentary. "It's kind of obvious, isn't it?" Bill said.

We decided that before continuing with the surveying we would do a little path-clearing. We wanted a path along the west property line eventually anyway, and preparing it now would make it easier to get back and forth to the area we still had to survey.

Even with four of us working, the clearing operation was slow. We chose the route that required the least tree-cutting. This made for a somewhat wandering path, but Rick (whose California experience had of course heightened his sensibilities far beyond those of us indigenous Midwesterners) argued that such a path was aesthetically much more pleasing than a straight one. We made the path four feet wide--big enough for my small tractor, but not big enough for a pickup truck. Rick assured us that this also better preserved the sanctity of the woods.

Bill took to the task with relish. While Andrea, Rick and I had to use the saw or clippers to penetrate the undergrowth, Bill was magically able to make the machete work.

After observing him hacking his way along for several hours with the blunt instrument, Rick noted that Bill operated as though we had put him on “automatic chop.”

By early afternoon, stopping only for lunch, we had completed a rough path most of the way to the wide ravine where Rick and I had suspended our efforts the day before. We were all too tired to continue the clearing activity, so while Andrea and Bill drove into Three Oaks to look around, Rick and I resumed our surveying. Fortified with fresh insect repellent, we laid our line through the ravine and up the bank on the other side. The stream running through the ravine was small enough to step over and presented no obstacle. Near it we saw a great many small frogs, which splashed into the water as we approached. Rick, in his unique California way, took this as a propitious sign.

The terrain to the north of the ravine, through which we now moved, was different from that to the south. Here the shade from several large, gnarled old beech trees had apparently reduced the profusion of smaller trees. For this reason or some other there were also more bushes and even some grassy patches. We could take sightings well beyond our prior twenty five foot limit and moved much more rapidly until we came to another ravine traversing our path. This one (which we named, appropriately, the “North Ravine” as opposed to the “South Ravine” crossed earlier) was not so wide--less than a hundred yards--but had even steeper sides and held more trees. Getting down into it and through it was the hardest part of our work yet. When we had reached the other side it was well into the dinner hour, and Andrea and Bill had returned to remind us of this fact. We suspended the project again at that point and returned to Glencoe.

The next day Rick and I alone came back to the farm, hoping finally to complete the surveying job. The area where we now worked, north of the North Ravine, was different still from the other areas we had passed through. Now we were in a mature woods, which did not appear ever to have been cleared. Enormous beech and sugar maple trees, interspersed with a few oaks, towered over us everywhere. While we had seen some comparable trees earlier, principally on the ravine banks, they did not inspire the same awe in small numbers. We stood and looked for a long while before beginning our work.

The understory of trees here was fairly thick, and we again found the going slow. After about fifty yards, however, I noticed a decided break in the trees ahead. I walked forward to investigate and discovered a cleared road through the trees coming right at us, then making a right angle turn to the east. Just to the south of the east leg of the road I found a long stretch of old, rusty barbed wire running east to west.. One thing about our surveying that had bothered me greatly was how I was going to determine when we had come far enough. These landmarks appeared to answer the question. The barbed wire must mark our northern boundary, and the road must have been cut by my northern neighbor to give him access to *his* woods.

Rick agreed with my conclusion, and we congratulated each other at having seen our job through. It was tiring work, and we were both glad to have the end of it near. We did, however, have to complete the last hundred feet or so. I made the sightings and extended the nylon cord. On the last sighting the north reading on the compass lined up squarely with a big maple tree that appeared to be on a line with the barbed wire that marked the north end of the property. There was where we would stop.

As we tied the end of our cord to the maple tree I happened to glance down. Directly under the cord, protruding from the ground at the base of the tree, was a piece of bent metal pipe. I tried to pull it but it wouldn't budge. I then noted that the bend in the pipe appeared to have been made by the tree growing against it. The thing must have been there for years.

Rick, who had been watching me, grinned. "You know what that pipe is?" he asked. I didn't respond. "That's got to be a marker that somebody put in there to identify the corner of your property. I've heard surveyors talk about 'monuments' to mark corners. That's your monument."

I looked back at our line of cord, laid for half a mile through the woods with only a compass, and ending directly over our "monument."

"I guess it worked," I said.

"I wouldn't have believed it, but it damn sure did." Rick was still grinning.

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A number of years have now passed since we completed our surveying feat. A large portion of the nylon cord we laid has disappeared for reasons that aren't clear. But it really isn't necessary any more. We have indeed, by spending time in the woods, become so familiar with it that, like Robin Hood, we know where we are without benefit of artificial guides. It is a beautiful place during all seasons of the year. But we probably would not have come to know the woods so well so soon had we not carefully established its boundaries at the outset. Our delayed possession of the farmhouse (the tenants did eventually leave, but not until after our week of vacation had ended) thus may have resulted in an enjoyment of the rest of the property that otherwise would have been delayed for months or even years.