

LEARNING TO SEE THE IMPACTS OF INDIVIDUALS*

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The principal purpose of fieldwork, obviously, is data collection. Every geographer who goes to the proverbial “field” does so with the intent of gathering data that cannot be obtained otherwise (Figure 1). In this regard, fieldwork is not much different from going to the library, something we all do, mainly to get books that are not in our offices or homes. But there is another dimension to fieldwork, one that it shares with libraries: discovery. From time to time we encounter unexpected “treasures” on the shelves near the books we come to check out. In a similar vein, fieldwork can result in some truly unanticipated finds.

Discovery, however, is not simply the finding of something unexpected, such as additional data. It can also result in a change in the way one thinks about and interprets phenomena. To illustrate using the library analogy again, that unanticipated book discovered on an adjacent shelf may have nothing to do with the topic of the volume we came to check out. It might have been the title that caught our eye, the size of the tome, the style of type on the spine, or even the color. Whatever it is makes no difference. The important thing is that we found something unforeseen and that we subsequently learned from it.

Can discoveries be anticipated? Sure, to an extent. Just as we all expect to come back from the library with books we never intended to check out, geographers expect to come home from the field with information that eludes precise forecast. However, just as we all expect to find new things, some discoveries are so great, so eye-opening, that there is no way they can ever be anticipated. As a result, they revolutionize the way things are perceived. Preconceived notions, regardless of how old, well established, and widely held they may be, are then challenged, if not overturned. In this essay I relate the story of my greatest field discovery.

Actually, my one big discovery is a series of small discoveries, all made within a few weeks of each other and linked by a common thread, farmers who were bringing previously unused land into production. It happened during the summer of 1981 in the Valley of Sonora, Mexico, where I was carrying out research funded by the National Science Foundation (NSF). The project had its roots in my dissertation research, which dealt with prehistoric settlements and agriculture and had involved fieldwork in 1977 and 1978 (Doolittle 1988b). Once my dissertation fieldwork was complete and my data were analyzed, I concluded that prehistoric agriculture in the valley was first practiced on the floodplains of the arroyos or ephemeral tributaries, and later spread onto the floodplain of the perennial river. Shortly thereafter I framed

* This essay is written in honor and memory of Paul Ward English, whose experiences in Afghanistan surely qualify him as one of the all-time great field geographers.

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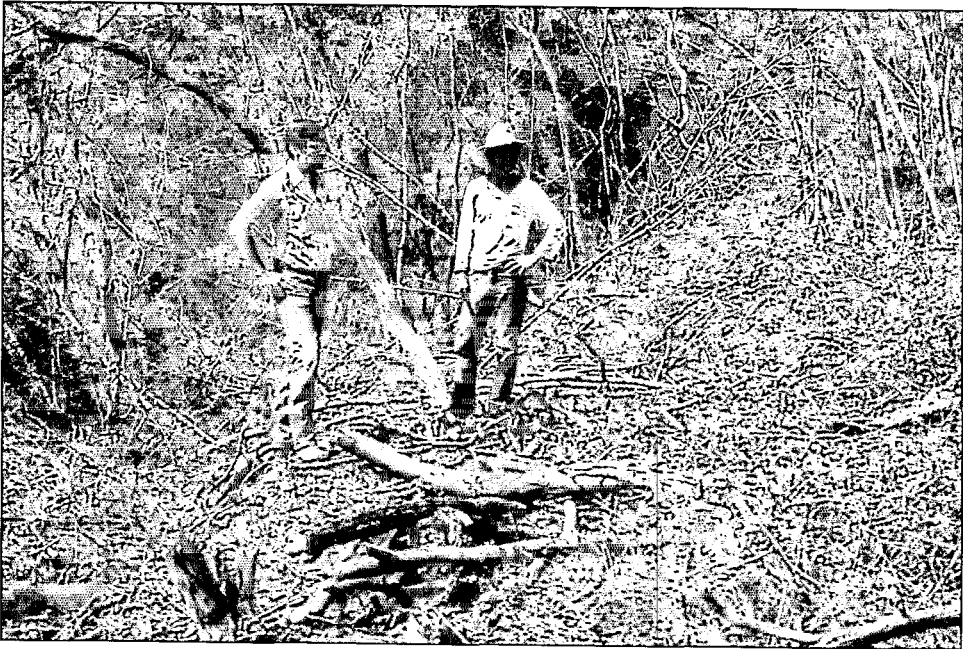


FIG. 1—The author (left) receiving a geography lesson from Mexico's northeasternmost slash-and-burn shifting cultivator, southeast of Llera, Tamaulipas. (Photograph by Dean P. Lambert, March 1987)

this finding into a model of the stepwise development of land use (Doolittle 1980). In the interim, however, I found myself reflecting on present-day agricultural land-use changes in the valley. Although my dissertation fieldwork was principally an archaeological survey, I couldn't help noticing the current agricultural activities and land use going on around me.

My memories and field notes concurred. The entire floodplain was under cultivation in 1978, and farmers were expanding agriculture up the arroyos. This was exactly the opposite of what my dissertation research had concluded, and it clearly begged for additional study. I returned to Sonora in 1980, principally to gather data and formulate my ideas in preparation for my proposal to the NSF.

The project I finally proposed followed the typical format. It was developed out of an existing corpus of research conducted overwhelmingly by scholars other than myself and from a variety of disciplines, including agricultural economics, rural sociology, and anthropology as well as geography. It opened with a brief statement of the problem. The theoretical foundation was laid next. The specifics of the particular case study were then outlined. Hypotheses were formulated, and the methodology was spelled out in detail. Convention was adhered to throughout the proposal, and, indeed, it permeated my thinking. I had notions that were entirely preconceived, but these were far from being uniquely mine; they were well articulated in the literature—which, of course, is where I learned them.

Of all the notions I maintained, three proved to be of major consequence. One notion was that land had to be prepared before it could be cultivated. Everything I had read and heard about settlement and farming led me to believe that farmers cleared vegetation and rocks from parcels that would become their fields, then constructed features, such as terraces or irrigation canals, prior to planting their crops. To illustrate, before farmers could plant in swamps, they needed to build raised fields in order to get the crops above the water, and not vice versa. The second notion was that preparation activities were distinct from cultivation activities and that both were distinct from maintenance activities; for example, the construction of erosion-control devices and the weeding of crops were two totally independent activities, and fence repair was yet another, which had nothing to do with either. The third notion I carried to the field with me was that farmers performed various activities only after deliberation and then only with purposeful intentions. Farmers are, after all, rational, no-nonsense guys. (The notion of farmers being men is an entirely different matter, meriting, at the very least, an article unto itself!)

My notions started to evaporate shortly after I began my fieldwork. One of my first activities was to hire a private airplane and fly over my study area, taking photographs (oblique, but as close to vertical as possible) of fields in arroyos. From these I sketched maps, which I used to plan my detailed surveying and mapping of each field and of groups of fields. With maps in hand, I then began my systematic, on-the-ground investigations.

It didn't take me long to come upon something totally unanticipated. The fields I had identified from the air and on my photographs were areas that had been cleared of natural vegetation, principally mesquite (*Prosopis* sp.) trees. They were, indeed, fields. However, in places I also found corn (*Zea mays*) growing under the canopy of trees and in some relatively rocky soils. Some fields, it turns out, had been planted but not yet cleared of rocks and vegetation, so they couldn't be seen from above. For the most part, these yet-to-be-cleared fields were located upstream of older, cleared, and improved fields; recent agricultural expansion had begun near the river and was progressively moving into more distant areas.

Interviews with farmers later revealed that the first thing farmers did when bringing new land into cultivation was to enclose their plots with barbed wire and plant a crop. This was usufruct ejido land; new farmers had to delimit their claims by means of fencing, which also excluded communally grazed cattle, and to legitimize them economically by putting the land into use. Quite literally, if an initial claimant took time to clear his plot completely prior to planting, another farmer could petition the ejido, claiming that the land was not producing a crop. The ejido could then overturn the original claim and reassign the cleared, hence greatly improved, plot to second farmer. In order to ensure that they didn't lose their land, new farmers planted a crop as soon as possible, regardless of how little the yield might be. Local cultural, environmental, economic, and political conditions aside, the important thing in terms of agricultural landscapes, in general, was that land need not be prepared prior to planting. Once their initial crop was planted, new farmers could

begin to clear the land and to build features that would improve the fields. Of course, as the crop was growing they had to tend it as well. And it was here that my other two preconceived notions began to erode. Two examples should serve as illustration.

One farmer from whom I learned a great deal was a man I'll call "Umberto." When I first met Umberto, he and his sons were in the process of developing the newest field I encountered during my study. It was located far up the arroyo and had been fenced only the year before, at about the time the men planted a small crop of corn in scattered patches under some of the trees. Unlike older, more established fields, this new one did not yet have an irrigation canal to transport vital water from the arroyo channel. I asked Umberto when the canal was going to be excavated.

"In a few minutes," he responded.

I was incredulous. I knew that it takes more than a few minutes to excavate a canal! The literature on irrigation is replete with statements concerning the need for huge investments in labor, highly advanced surveying skills, planning, and well-organized social and political institutions. Accordingly, I assumed that my less-than-perfect Spanish had failed me, so rephrased my question.

"In a few minutes," Umberto responded again, this time in a somewhat more definitive tone.

I still couldn't believe my ears, so I asked for clarification. With more than a little frustration, Umberto called over his son, who was preparing a soon-to-be-planted area with a horse-drawn plow. Standing at the farthest upstream edge of the field, near the corner away from the stream channel, Umberto took the reins, set the plow, aimed the horse upstream, and with a snap of the reins began to plow a furrow from his field to the channel, a distance of not more than 60 meters. Unlike the downstream end of the arroyo, where the stream channel was incised as much as 2 meters deep, here channel incision was barely noticeable, perhaps only 10 centimeters deep. When he got to the channel, Umberto lifted the plow, turned the horse around, reset the plow into the newly cut furrow, and headed back toward his field. When he returned, he looked me straight in the eye, pointed with authority to the nice, deep, double-wide furrow, which had taken him all of a few minutes to cut, and said rather firmly: "There, that's the canal!"

A furrow, even a double one, definitely did not fit my visual template of an irrigation canal. Nevertheless, as a scholar, I felt obliged to comment, but not without a little reservation and concern. Somewhat sheepishly (a very non-Sonoran way of doing things), I said: "That's really not much of a canal."

"Not now," Umberto said matter-of-factly, "but wait until the arroyo flows." The light not only came on in my head, it shone brightly. What genius! This guy probably never took a course in hydrology, geomorphology, or the philosophy of science, but he certainly knew about channel scouring, and, perhaps more important, he was using entropy to his advantage. So much for everything I had read about high labor, technology, and social requisites for irrigation.

Another farmer from whom I learned a great deal was “Augustín.” One very hot day, while returning from work far up an arroyo, I came upon Augustín, who was weeding his field. He had attached a cultivator to his horse-drawn plow and was passing between the rows of knee-high corn. In the process of turning under the weeds and cutting the furrows, he was also ridging earth around the aerial roots of his crop. Needing a break from his labors, Augustín parked his horse in the shade of a tree left in his field for just such purposes and walked over to the fence to chat with me for a while. Somewhere between the horse and me, Augustín picked up a loose rock on the ground, one that he had doubtless turned up with his cultivator not long before. When he got to the fence he didn’t drop the rock initially and intentionally but talked with me for several minutes before his grip loosened and the rock slipped casually from his fingers. I thought of asking him about the rock, but it occurred to me almost instantaneously that he would have had no idea of what I was talking about. I was convinced at the time, and I remain so today, that he never knew he had picked up that rock. Some actions are so second nature that they are performed with no cognizance at all.

Okay, so what does this mean? Well, I looked at the base of the fence and sure enough, there must have been a thousand rocks of various sizes along its entire length. Obviously, Augustín had been clearing as he cultivated. Furthermore, with neither planning nor thought, he had been constructing a check dam that would impede the flow of floodwaters across the surface, thereby allowing sediment to accumulate. From then on, I began to pay special attention to the downslope/downstream ends of fields. It didn’t take me long to figure out that many of the terrace risers in the area had their origins as check dams, which were created unwittingly as farmers like Augustín simply discarded rocks they didn’t even realize they were clearing from their fields. Construction, cultivation, and maintenance were not discrete activities in this case.

In addition to being important in terms of understanding agricultural change and land use, this discovery has major implications for geoarchaeology and landscape studies. A few years after the incident involving Augustín and the rock, I was with a group of archaeologists in southern Arizona. They were graciously showing me some of the prehistoric agricultural sites on which they had worked and were soliciting my input and opinions. At one ancient field site I was shown a long rock alignment and asked how I thought it functioned. The question, of course, was based on the notion that everything was built with a purpose and functioned according to plan. My response was simple. “Maybe it was the edge of the field and the place where the farmer simply discarded rocks he cleared while weeding.” Their response was not unexpected. One asked: “What the hell kind of explanation is that?” “Unlike many I’ve heard,” I rejoined, “one supported by ethnographic evidence.”

Scholarly articles that deal with the formal findings of my NSF-sponsored research have appeared in such journals as the *Annals of the Association of American Geographers*, *Geografiska Annaler*, and the *Geographical Review*, as well as in one

book chapter (Doolittle 1983, 1984, 1988a, 1989). Fortunately, they have had some positive impact. They have not, however, paralleled current trends in the academy.

The discovery—or perhaps more appropriately, discoveries—I made changed profoundly my way of thinking about the world. My research in general, and my fieldwork specifically, were framed in the context of cultural ecology, a subdiscipline that has traditionally been characterized by community-level investigations (see Butzer 1989). In the past, emphasis was placed on subsistence activities as a link between communities and the biophysical environments in which they exist. Today, emphasis has turned toward the larger political and economic settings in which communities exist. Whereas most studies became broader and more global in scope, mine became narrower and more focused on the individual. The two perspectives are not, of course, mutually exclusive. Another example from my work should illustrate this point.

Several years ago I took a photograph of a field in Veracruz, Mexico. Two crops are evident in the picture. First, there are rows and rows of corn approximately waist high. Planted among the corn, in rows but spaced several meters apart, are juvenile orange trees approximately 2 meters tall. I show this slide to students in my “Environment, Development, and Food Production” class each year and ask them: “What is it? What do you see?” Typical answers include the following. “Corn.” “Corn and some kind of trees.” “Intercropping.” Each of these answers is correct, but none goes to the real heart of the matter. Responses such as these are based on the notion that the world is essentially a static place. What you see is what there is. If change is acknowledged, it is something that is envisaged as a deviation from the norm. In fact, however, we should probably envisage change as constant and the norm and should consider static conditions deviations.

Never has a student responded to my query by stating: “I see what once was a cornfield in the process of becoming an orange orchard.” As correct as the typical answers may be, this is the right response. Corn is a rapidly growing annual that is planted and harvested each year. It long has been a subsistence crop in Mexico. Orange trees are relatively slow growing perennials that do not produce a crop the first few years after they are planted. They are of commercial importance and require investment of both time and capital.

Entering into the commercial production of oranges is something easily achieved by large corporations. Such enterprises can afford to buy land, hire laborers, plant and tend the crop, and wait for a return. For smallholders, however, the proposition is much more prohibitive, unless it is undertaken gradually. Such farmers cannot abandon their dependable subsistence crop for a commercial crop that will not produce a yield for several years. And, of course, they probably do not have the funds to buy a large number of orange saplings to begin with. What they can do, however, is keep their subsistence crop in place and plant, among the corn, as many orange saplings as they can afford to purchase each year. Over time the orange trees will increase in both number and size. Concomitantly, the number of corn plants will diminish. Eventually the orange trees will replace the corn plants as the only crop

on the field, and the shift from subsistence to commercial production will be complete. Whether smallholders should undertake such a venture, is, of course, debatable. Two things are certain, however. They can; and I have the picture to prove it.

In sum, there is a big difference between looking and seeing. The former is relatively simple, and, accordingly, quite common. Every geographer looks for things. Seeing is much more difficult, and, I fear, less frequently practiced than is looking. It does take some skill, but that skill can be acquired with practice. The actions of individual farmers need to be seen and not merely looked at.

Carl O. Sauer, and James J. Parsons, two of my all-time favorite geographers, each said something pertinent about successful fieldwork. Sauer said: "Locomotion should be slow, the slower the better; and should be often interrupted by leisurely halts to sit on vantage points and stop at question marks" (1956, 296). This quotation flashed through my mind verbatim as time stood still while I was crashing the motorcycle I had purchased to expedite my Sonoran studies. But, I digress. Parsons noted that "it pays to keep going back to an area, a people. . . . Significant phenomena or relationships continue to present themselves, things that were at first completely missed or whose significance was not originally apparent" (1977, 14). If there is any quotation I might like someday to be remembered by in a similar vein it is: There is more to be learned by going to the field and watching and listening to farmers, than going to the library and checking out the latest book on agriculture or geography.

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