

Field Research, Research Design, and Scientific Method (A Personal Account)

Written by Patricia Sohn

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PATRICIA SOHN, APR 13 2017

My first experience doing field research was age 10. I had been to Haiti and the Dominican Republic twice before, at ages 6 and 7. I had picked up French, a little bit of Haitian Creole, and a tiny bit of Spanish on those early trips. But, at age 10, my family spent a year in a rural Haitian town on a beautiful bay: Jacmel.

My younger brother and I were the smallest in our research party, so we could climb into crevices that no one else could reach in the caves where we did the research. We were digging for the fossils of extinct rodents. We were looking for the fossils of *Nesophontes zamicrus* and *Plagiodontia aedium* (also called, *Hutia*). These are – or were once – very cute animals. We had little hope of finding them alive. My father wanted to prove their (recent) historical presence as a species on Hispaniola, and to trace their correct place in the taxonomy of the related genus for each.

Living overseas in places like Jean-Claude Duvalier's Haiti had benefits and drawbacks. On the benefit side, we were exposed to a fresh, francophone culture of large family lunches and French Catholic schools that began at a reasonable hour (8:45 a.m.!), broke for lunch, and studied again in the afternoon until about 4 p.m. After school, I would trudge down to the beach, where I would meet my mother and brothers. We would enter the Bay of Jacmel, body surfing, swimming, and snorkeling like pros. Haiti was safe from daily crime; few people felt it worth incurring the wrath of the state for minor pinching of material objects. So, at ten years old, I could easily walk around Jacmel alone, or with my brothers and friends.

As for drawbacks, one of my least favorite memories was passing out next to the carcass of a dead horse who we passed while hiking toward Peak Macaya; I had a 102 degree fever, which turned out to be something related to (although not) Dengue. Upon returning to Jacmel, our French doctor was not much more pleasant than the fever itself. Living abroad for long periods of time almost always includes some degree of cross-cultural encounter of the medical kind.

On the drawback side, too, of course, we had no T.V., no air conditioning, and no universal plumbing. We had internal plumbing from a cistern. The one time that the cistern went dry, we collected water using tarps on the back porch, which was large.

The state was more visible in Haiti at the local level than in the U.S.

On the up-side, I read C.S. Lewis for the first time in Haiti, and I learned to enjoy card games in evening hours in place of T.V.

I did learn about the scientific method during these research excursions. We had to measure the layers of soil from which we were extracting fossils, although my father also relied on carbon dating to ensure the correct dating of specimens (e.g., triangulation). My brothers and I had to recount to my father how far we thought we were able to go into certain cave rivulets so that he could estimate their place in the sedimentation of the larger cave. My father would talk about some of the going theories of the day that were informing his searchers (e.g., the deductive end of the research process); his own hypotheses (also the deductive end of the research process); as well as what we

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were, in fact, finding amongst the fossils (the inductive end of the research process). The fossils were primarily teeth, so my brothers and I became fairly proficient, at the time, at identifying which sort of tooth we had found (a bicuspid, etc.). We would always make a stab at identifying the species – with greater and lesser success. Sometimes it was quite clear from the tooth, and sometimes it was quite a mystery. My father could almost always tell which was which. There were times, however, as with one tooth fossil that my younger brother and I found in a tiny, deep rivulet of one cave, that even my father could not identify the species immediately. In those cases, he would return to the office, the books, and to colleagues to identify. I believe that one new species was identified that way.

I spent some time as a research assistant for my father during my undergraduate years, doing technical editing of an edited volume on paleontology of the West Indies that he was publishing. (At the same time, I was doing technical editing on a new translation of the Apocrypha for a faculty member in Religion). As an undergraduate, my OPS job was as a clerical assistant in the Department of Biochemistry. On the one hand, they taught me how to do payroll (it is a useful skill when talking to HR, I promise you!); and they also taught me review NSF grants. It was a very successful department at gaining NSF grants, so this was an extremely useful education for me. When I went into the field for my own first research as a participant observer, the “participant” part of that process ended up with my acting as a volunteer to review – grant proposals in English! These skills have been extremely useful in reviewing proposals for organizations such as the Fulbright Foundation, where a committee is expected to comment intelligently on proposals from art, music, sciences, math, humanities – oh, yeah, and the social sciences.

What I learned from all of this is that the scientific method, which I read about via Thomas Kuhn and Charles Darwin with my father as a senior in high school, and later again in graduate school, is the same across disciplines. It is used across a vast range of types of data; social (plant, animal or human), cultural (plant, animal or human), and material contexts; time periods; methods of data collection; and methods of analysis. I saw how different disciplines treat the different sections of a scientific proposal: Rationale (deductive and inductive); Data (inductive); Methods (deductive and inductive); Analysis (inductive); Discussion (inductive and deductive); and Conclusions (deductive and inductive). It is a truism that the results must be falsifiable. That is, you must find something *new* in the field, inductively; compare it with the deductive theory that you developed from the outset; and be willing to say whether they correspond or not. If they do not, you must offer your re-theorization of what you think you have found. Some disciplines (or sub-disciplines) used historical or contextual materials (e.g., fossils, observations of mammalian behavior in the field); others used lab experiments (with living animals, plants, or, alternately, with chemical compounds); and still others used experiments of the type that did not fit neatly into either former category (e.g., experiments involving physics, mathematical theorems, etc.).

I learned that the scientific method is pure genius. It travels beautifully. In short, I learned that “science” is a many splendored and varied thing. It even includes qualitative research.

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