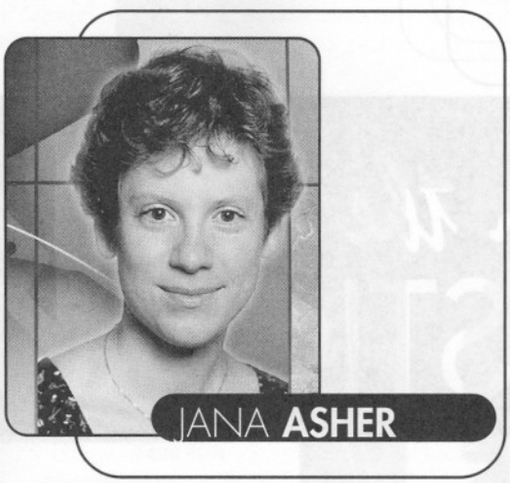
A Statistician Turned Field Worker:
Six Months in Sierra Leone, Part I

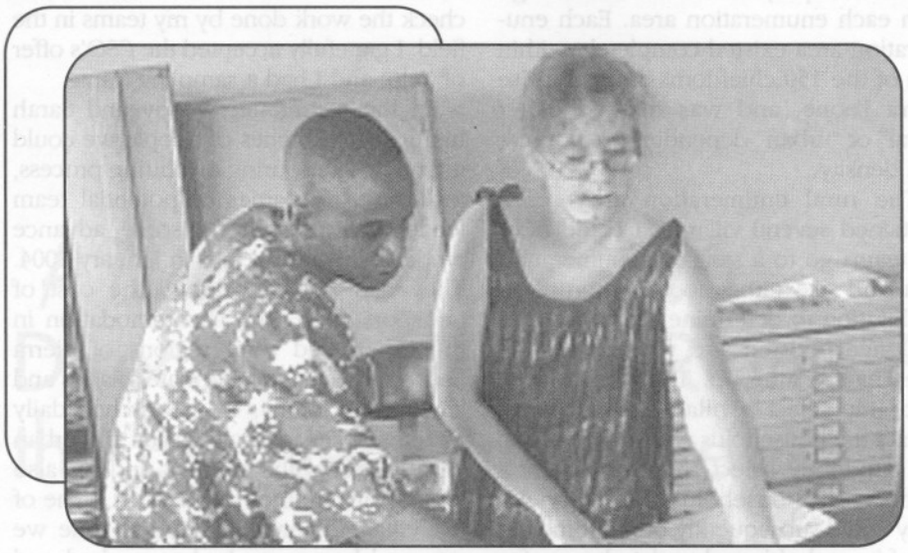


It was a reasonably sunny but cool September day in 2003. Although my dissertation for the Department of Statistics at Carnegie Mellon University was not (and still is not) yet complete, I had moved to Washington D.C., to live with my brand new husband, and had taken a leave of absence to get my son settled into a new school. Having just completed an analysis for the Peruvian Truth and Reconciliation Commission with Patrick Ball, I stopped by his office at the American Association for the Advancement of Science to see what else he might have for me to do in town. Little did I know that I was about to be conscripted for the rest of my academic year.

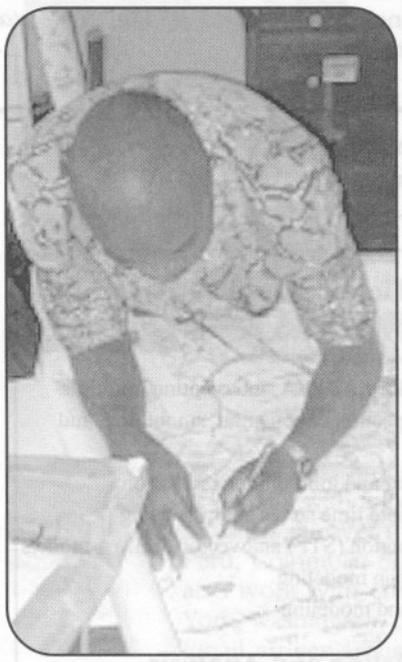
Patrick had been working with Wendy Betts of the American Bar Association for about a year on a grant proposal to the U.S. State Department to do work in Sierra Leone. The grant was to be used to gather data for the purpose of estimating the number of human rights violations that occurred during that country's 10-year long armed internal conflict, via a combination of statement-taking and a random sample survey. When I arrived at Patrick's office, he had just heard that the grant proposal had been approved. Could I put together a project plan for a nationwide survey on human rights violations by our meeting with Wendy the next day, including all aspects of obtaining the random sample, designing the questionnaire, testing the questionnaire, training the interviewers, and implementing the survey in the field?

"No problem," I answered with false bravado, and I went home, panicked wildly for about half an hour, and then calmed myself down. I could do this, I reasoned. I was one of the few statisticians in the world focusing on the analysis of human rights violations data. I had spent time working at the U.S. Census Bureau, and had learned about all of the steps involved in putting the decennial census together. I had survey methodology training from the Joint Program in Survey Methodology at the University of Maryland. I had independently researched questionnaire design for sensitive topics, and had attended the QDET conference the previous year as a student fellow. I knew who the experts were, and could go to them if I ran into trouble. I could do this.

I got to work laying out a schedule of activities. First, an advance trip later in the fall to research potential sample frames and get the lay of the land. Then a questionnaire design period, based on well-formed research questions and including reviews by subject experts and questionnaire design experts. Then to the field for a translation and back-translation of the survey, a questionnaire-testing period that would include cognitive interviewing in multiple languages and a field test, a six-day training course for interviewers, and a period of



Bob Johnny, Assistant GIS Officer of the Sierra Leone Central Statistics Office Cartographic Mapping Team, confers with Asher about one of the enumeration areas in her sample.



Ken Tucker, Mapping Officer for the Cartographic Mapping Team, demarcating enumeration areas in preparation for the 2004 Sierra Leone Population and Household Census.

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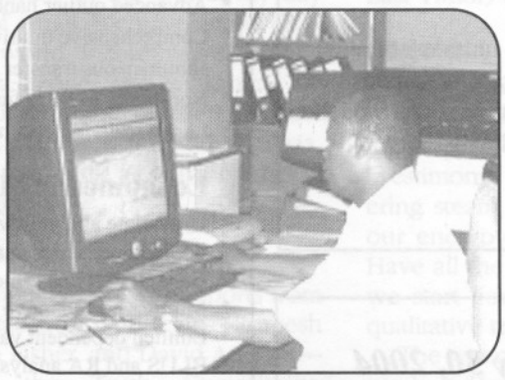

Isaac Mwangangi, GIS Consultant from the European Union, studies scanned maps recently updated for the 2004 Sierra Leone Population and Housing Census.

field work implementing the survey.

Suddenly I realized what an opportunity I had just been handed; to work on every aspect of a survey from start to finish, applying the latest research. I was excited by the challenge. My enthusiasm must have been contagious, because at the meeting with Wendy the next day she approved the project plan. I had just taken my first step towards becoming the documentation coordinator for the American Bar Association Sierra Leone War Crimes Documentation Project, which would require my presence in Africa for several months.

My adviser, Professor Fienberg, took the news well; he was on sabbatical in France that year and warned me that at some point, I really was going to have to write that dissertation. But I had his blessing. My husband took the news reasonably well, in that he didn't divorce me and agreed to watch over my son with the help of a nanny, thereby proving that angels really are among us. My son's teacher was a saint; she spent quite a bit of time talking with him about why mommy was leaving the U.S. and convincing him that it was a good idea.

By November, I had done background research on the geography and political boundaries within Sierra Leone. I had begun to contemplate potential sample frames, and I consulted with Gordon Willis of the Applied Research Program, National Cancer Institute, National Institutes of Health, and Roger Tourangeau of the Joint Program for Survey Methodology on cognitive interviewing and questionnaire design. I had even gotten my Yellow Fever shot. I was ready to go.

Three of us went together on the advance trip to Sierra Leone for 10 days in November 2003: myself, Wendy Betts, Country Director, War Crimes Documentation Project, and Sarah Churchill, Program Associate. Wendy and Sarah were focusing on finalizing the budget for the survey and some other projects that would be implemented simultaneously with mine, and my biggest task was to figure out what the sample frame for the survey would be and continue to develop a schedule for the project.

For the uninitiated, a sample frame is a complete list of the units to be sampled. In the context of household and population surveys, such a list might occur in the form of maps of houses, if

households are to be sampled, or lists of individual people, if a person is the sampling unit. Very often in the world of human rights, the population of interest resides in a developing country, where no good records of that population, let alone detailed maps, exist.

I, however, was in luck, because Sierra Leone possesses a relatively sophisticated Central Statistics Office (CSO), which had benefited from partnerships with the United Nations Statistics Division. Not only that, the European Union was funding a new Population and Housing Census in 2004, and for that reason the Cartographic Mapping Team was in the middle of remapping the entire country. They wouldn't have the new maps ready until after the fieldwork for my survey had been completed, but I was welcome to take copies of all of the maps from the 1985 Population Census.

The seasoned survey methodologists reading this article are now asking themselves, how useful could 20-year-old maps be? The answer is: extremely useful. The maps were of demarcated enumeration areas, and the CSO had created population projections for 2004 to go with each enumeration area. Each enumeration area existed completely within one of the 150 chiefdoms that comprise Sierra Leone, and was marked either "rural" or "urban" depending on population density.

The rural enumeration areas each contained several villages. I could have my teams go to a sampled enumeration area and use either local expertise or exploration to determine which villages no longer existed and where new villages had sprung up. They could then randomly select a village to visit, enumerate the households within the village, and randomly select a pre-determined number of households to interview. They could subsequently bring home the list of households and updated maps for me to use in creating village- and household-level weights.

The urban enumeration areas were a bit trickier, but the basic principle could be applied there as well; additionally, I could use the population projections as part of the sample design. Best of all, if the new 2004 enumeration area maps were available before I left Sierra Leone, I could refer to those as well to cross-check the work done by my teams in the field. I gratefully accepted the CSO's offer of help, and I had a sampling frame.

In the meantime, Wendy and Sarah had gathered names of people we could interview later during our hiring process, including the names of potential team leaders who could do some advance work prior to our return in January 2004. They had also researched the cost of transport, food, and accommodation in the urban and rural regions of Sierra Leone, as well as appropriate salaries and labor laws. Jointly, we researched daily patterns of life among the rural and urban populations of the country, and we also took a trip "upline" to see what some of the villages were like. By the time we returned home, we had re-worked and filled out the project plan. Picking the sample and questionnaire design would commence in December, and work within Sierra Leone would begin in January. All systems were go.

Look for Part II of "A Statistician turned Field Worker: Six Months in Sierra Leone" in an upcoming issue of *Amstat News*. ■