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A Conversation With John Mutter

Earth Science Meets Social Science

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When John C. Mutter was growing up in 1950's Australia, he never once saw a poor person.

Not that the family was well off. "My mother was a single working mother and that was rare in the 1950's," he said. "But there was this generally middle-class veneer to all of Australian society in those days."

Only years later, he said, as a geophysicist traveling from his native Melbourne to remote northwestern Australia, did he encounter any signs of poverty.

There, for the first time, in Broome, he met aboriginal people and was shocked to find fellow citizens who were ill and malnourished.

Recollections of those encounters haunted Dr. Mutter through the 1970's and 1980's, as he developed an international reputation for his research on undersea geology.

"All the years I worked as a geophysicist, I wondered about issues like global poverty and what it might take to get people out of it," said Dr. Mutter, 57, who is now the deputy director of the Earth Institute at Columbia University. "I kept wondering if there wasn't something we scientists could do about global poverty."

Now married to Carolyn Mutter and the father of five children, Dr. Mutter said he had spent the last five years trying to answer that question.

As a result, he said, "I've come to think that some of the answers to global poverty might be found in the places where the social and hard sciences inform each other."

In most parts of the world, people depend on the earth for their livelihoods. "If we can understand more how the earth functions," Dr. Mutter said, "we can learn how it interacts with human well-being."

Q. Is it a long reach — mixing the hard sciences like geology with the social sciences?

A. Not when you're looking at natural disasters, climate and its local manifestation, weather. Disasters exaggerate social ills. They shine a light on them. As a seismologist, when you try to understand how strong a material is, you stress it. You can't calculate its strength from its atomic structure.

You've got to try to bend it to know where it's strong and weak. I think nature does that with society.

Over and over, we've seen how a disaster in a poor country is far more lethal than an identical one in a wealthy place. Last year's earthquake in Pakistan took an estimated 100,000 lives.

The 1994 Northridge earthquake, which was similar in magnitude and depth, killed only 63. When Hurricane Ivan tore through the Caribbean in 2004, it killed about 2,000 Haitians. Within the United States, Ivan's toll was less than 100.

Q. Why are the differences in disaster tolls so great between rich and poor countries?

A. Poor people live in more fragile dwellings that fall down on them during earthquakes and floods. They live near riverbanks or on steep slopes which are subject to landslides and inundation during flooding. Richer people have the option of living in safer places.

Plus, they have all kinds of buffers — building codes, advance warning systems, insurance, first responders. One marker for underdevelopment is the lack of a first response system. When you saw the television reports on the tsunami, you never saw ambulances arriving to help afterward. The main image of 9/11 in New York was that of first responders rushing in to save lives.

Another marker is a high death toll. There have been huge landslides in Malibu, though I don't recall any fatalities. There was a landslide in the Philippines a couple of months ago. About 1,000 died.

Q. By your markers, was New Orleans a first world or a third world disaster?

A. After Katrina, I wondered about that. I started by looking at the death toll. In New Orleans, there are 1,417 bodies that have gone through the morgue and who've been determined to be Katrina victims. That doesn't count people who may have died in auto accidents escaping or those who died after they got to the point of escape. There are 4,000 people still unaccounted for. Some of them probably died. But whether it's 1,417 or 2,000, that's a third world number. Hurricanes that come through Florida take a dozen lives, maybe 20.

Q. Were there any discernible trends among the dead?

A. If you map their addresses, you find the flooded areas were often the poorest, with the highest number of African-Americans. This was a storm that selected for the poor, which is another third world marker.

Flood vulnerability is one of the classic things that poor people are subjected to. Anyone who's traveled can tell you why. It's because the slums are always around riverbanks, in drained swamps. The poor occupy the bottomlands. In this case, the Lower Ninth Ward or St. Bernard Parish or the areas near the Industrial Canal.

What's really different about Katrina is that this disaster selected for the old: of all the bodies that have been identified, 64 percent were over 60. And that plays against the fact that the population of the flooded areas, only 15 percent were over 60.

In floods, it's usually the very young and the aged who die because survival requires a great deal of physical stamina. Yet in New Orleans, there were almost no deaths among the young — white or black. One under-5 black child died. In the under-40 population, no white people died. Among the aged, death became a kind of racial equalizer. It was old people, black and white, who ended up in St. Gabriel's morgue. In the flooded areas, if you were white and didn't escape, you were probably old.

Q. What do you make of skewed demographics of death in Hurricane Katrina?

A. As a scientist, I'm not sure what to make of it. What does this say about how we treat the elderly? It may be — and we'll have to look into this — that the flood preferentially took people living on their own.

These isolated elderly might not have perceived the danger of remaining, or they may have not had the means to escape. It may not have been as callous as younger people saying, "I'm out of here and to hell with them." It just may be that we don't quite appreciate the vulnerability of the elderly.

Q. At the recent meeting of the American Association for the Advancement of Science you suggested that global warming was an issue linked to global poverty. How do you make that connection?

A. As we've discussed, people in the developing world are more vulnerable to weather events and changing climate than people in wealthier countries. In this country there are people who say, with some justification, So what if it gets to be a half a degree warmer? That's going to happen in the northern latitudes and in the winter. We have the capacity to get through it.

The problem is that in the tropics and in arid zones, people are already living on the edge. A half-degree change in that part of the world can put very, very vulnerable people over the edge. We're resilient. They are not.

Q. How do you deal with that?

A. By clearly demonstrating how vulnerable some people are. I don't think it's well enough understood.