

Social and Chemical Life in Mexico City

Society for Medical Anthropology

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Bioethnography as a methodological approach

The most prevalent form of lead exposure in Mexico City today is culinary: lead glazed ceramic dishes that are prized within families. Lead glaze makes the dishes shine and the food taste sweeter, and the enormous *ollas* (pots) that hang on kitchen walls connect current generations to past and future family celebrations. What if anthropology could tell the broader story of what these pots do, and their effects, by intertwining their social and chemical lives? Our bioethnographic project, Mexican Exposures (MEXPOS), seeks to do just that; we insist that, to understand lead exposure and working-class life in Mexico City, we need to keep glaze, sweetness, celebrations, and toxicity together.



Lead-glazed ceramic pots on the kitchen wall, August 2017. Elizabeth F. S. Roberts

Based in Mexico City and the University of Michigan, [MEXPOS](#) brings together medical anthropologists and environmental health scientists to create an experimental bioethnographic research platform that combines ethnographic observation and biochemical sampling.

Understanding that environment-body interactions are always relational, contingent, and constructed phenomena, we aim to better understand the larger histories, life circumstances, and environments that shape health and inequality among working class people in Mexico City.

Local/situated biologies, a key constructionist concept in medical anthropology (Lock 1993), emphasizes how “biological and social processes are inseparably entangled over time” (Lock and Nguyen 2010). In this view, biological information “produces a real but partial picture” (Lock and Nguyen 2010) of human life. Situated biologies approaches include enlisting biological processes and biological data, while also understanding their historical contingency: the looping effects that condition life circumstances. With our development of a bioethnographic method for examining biological and social exposures, MEXPOS puts the connection between health and inequality into action (Roberts 2015, Roberts and Sanz 2017).

While similar sounding to the bio-cultural synthesis formulated by US biological anthropologists, there are important differences (Beall 2006; Hadley 2010). By maintaining culture as distinct from biology, bio-cultural synthesis remains asymmetrical however, leaving unexamined the scientific study and the historical/economic conditions that continuously shape biological processes.

Our ethnographic work allows us to understand how toxins that experts can only posit as harmful, can also foster social life.

In contrast, bioethnography does not simply add culture to biology, to better understand human biological adaptation. Instead, by combining ethnographic observation and biological sampling in a synthetic, symmetrical analysis, environment-body interactions remain always relational phenomena.

Background

Since 1994, researchers from the US and Mexico have recruited through public clinics to collect blood, urine, hair, toenails, breast milk, and teeth from nearly 1,263 mother-child pairs in Mexico City. **ELEMENT** (Early Life Exposures in Mexico to ENvironmental Toxicants) is a longitudinal study of how chemical exposure effects fetal/childhood growth and neurological development. Initially focused on lead, ELEMENT now collects data on additional toxicants (bisphenol A, mercury, fluoride, phthalates) and health concerns (diabetes, premature sexual maturation) using new methods (metabolomics, epigenetics).



ELEMENT researchers taking blood samples from a participant, April 2015. Elizabeth F. S. Roberts

MEXPOS principal investigator [Elizabeth Roberts](#) began working with ELEMENT in Fall 2012, before embarking in 2014 on an intensive ethnography of six ELEMENT families located in two distinct neighborhoods. Her focus was on household/neighborhood environments and geopolitical processes relevant to the production of bodily states. Roberts's anthropological team currently includes postdoctoral researcher [Mary Leighton](#), [David Palma](#), and a team of undergraduates who analyze our data in a [coding lab](#).

The bioethnographic collaboration with ELEMENT has generated exciting new research directions, including a new project, [NESTSMX \(Neighborhood Environments as Socio-Techno-bio Systems: Water Quality, Public Trust, and Health in Mexico City\)](#), that brings together environmental engineers, anthropologists, and public health researchers as Co-PIs.

Bioethnography in action: Lead-glazed ceramics and water trust

Because ELEMENT focused initially on lead, participating families have been exposed to 25 years of health education focused on lead mitigation, including researchers physically removing lead glazed ceramics from the kitchens of participants whose blood-lead levels rose too high. Despite this education, some participants consider these ceramics to be essential, especially on religious holidays; handmade and passed down from their grandmothers, dishes honor a rural family life far from urban and sometimes violent Mexico City. Furthermore, food cooked in leaded dishes is said to taste sweeter.

Our ethnographic work allows us to understand how toxins that experts can only posit as harmful, can also foster social life. For instance, pollutants in some Mexico City neighborhoods with higher lead levels can protect against larger toxicants like violent police incursions ([Roberts 2017](#)).

Bioethnography, then, loops together the harm of lead glazed ceramic dishes and neighborhood toxic boundaries, these toxin's abilities to reinforce social density, along with the interventions of ELEMENT researchers, biological samples and datasets, and our own ethnographic notes and interactions for a more complete picture of situated biosocial life.

We insist that, to understand lead exposure and working-class life in Mexico City, we need to keep glaze, sweetness, celebrations, and toxicity together.

The next phase of MEXPOS involves a bioethnographic approach from the get-go, rather than adding ethnography to an existing biological study. [NESTSMX](#) is an NSF-funded interdisciplinary collaboration between public health, civil engineering, and anthropology researchers from the University of Michigan and the [Instituto Nacional de Salud Pública](#), that explores how neighborhoods, as socio-techno-bio systems, shape water access. We posit that unequal distribution of water, and variable trust in water infrastructure, leads to differing exposures to waterborne toxicants and pathogens. Additionally, if water is unreliable, people are more likely to drink soda, which then affects people's biology at molecular and clinical levels, contributing to increased cardiovascular problems, and diabetes and weight gain. These stigmatized bodily states may then make it harder to advocate for fairer water services, at individual or neighborhood levels: a looping reinforcement of both inequality and ill health.

MEXPOS as collaborative ethnography

In 2015 we set up the [Roberts Ethnographic Coding Lab](#), an experimental part of MEXPOS at the University of Michigan where undergraduates read, code, and analyze MEXPOS's ethnographic data. MEXPOS is unusually large for an ethnographic project, so the collective coding approach is essential; we have over 100,000 pages of fieldnotes and 30,000 photos, with more added each week. Having a group work with the ethnographic material opens up additional epistemological possibilities. Students bring their own life experiences to the data and their diverse training in natural and social sciences, allowing them to generate interpretations that were not apparent to the initial ethnographers. Collective ethnographic analysis thus raises questions about the situatedness of ethnographic data: produced as it is through the records, recollections, and analytic capabilities of the ethnographers and, here, a team of student interpreters and coders in a lab.



Household water storage and usage, April 2015.

Elizabeth F. S. Roberts

By posing research questions that cannot be answered through only one form of methodological expertise, and by facilitating team-based ethnographic investigation, our bioethnographic research platform provides a model for collaborative anthropological research that can tell the fuller stories of bodily social processes within specific lifeworlds.

Mary Leighton is a postdoctoral research fellow at the University of Michigan. A sociocultural anthropologist with a science and technology studies focus, her research addresses collaborative misalignments between scientists from the Global North and South. As part of Mexican Exposures she studies interdisciplinary and transnational collaborations between public health officials, ethnographers, and engineers.

Elizabeth F.S. Roberts is associate professor of anthropology at the University of Michigan. Her work has included research on assisted reproduction in Ecuador and the United States, reproductive governance in Latin America, transnational medical migrations and currently a collaborative environmental health science project in Mexico and the United States.

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