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Repairing Toxic:
Deferred Maintenance in Schools

Margaret Tebbe and Fred Ariel Hernandez

Schools, in the era of late industrialism (Fortun 2012), have become sites of infrastructural decay. Comprehensive data on their condition in the United States are sparse. Most studies estimate that around half of the one hundred thousand public schools nationwide have at least one major infrastructural problem (Eitland et al. 2017; U.S. Government Accountability Office 2020; Filardo 2021). These toxicities take many forms: lead pipes, broken air-circulation systems, buildings that cannot withstand extreme weather and toxic, heat-absorbing landscapes. Moreover, the buildings are precariously maintained via piecemeal repairs.

The toxic exposure produced by this decay represents a gap in understanding for both educators and environmental justice movements. In this article, we highlight how late industrial ethnography can make visible some of the toxic hazards in school buildings that produce, are embedded within, and are formed by late industrial management and repair. Both of the authors came to this work through ethnographic research in primary and secondary schools that was not initially focused on the environment but led us to recognize the importance of schools in environmental governance. Part of late industrial ethnography is studying the world not just as it is, but as it should be—

hence, we draw on ethnographic observation and interviews, along with our experiences teaching students of all ages, to uncover and address environmental injustice. All of these experiences were designed to operate as ethnographic encounters that "challenge and change existing order, [and provoke] new orderings of subjectivity, society, and culture" (Fortun 2012: 450).

Student interns at Azusa High School compare a satellite map of the school campus and their hand-drawn maps. Photo: Fred Ariel Hernandez, 2022.

Our primary site is Azusa High School (AHS), a predominantly Latino and low-income school located about twenty miles east of downtown Los Angeles. AHS was built in the late 1950s, shortly before the Interstate-210 freeway was constructed directly adjacent.

Azusa High School borders a freeway that carries hundreds of thousands of vehicles per day, producing massive quantities of toxic air pollution. Photo: Margaret Tebbe, 2024.

One of the authors (Hernandez) is an AHS alumnus and began to engage in environmental work after becoming an extracurricular sports coach in 2003, the same year that California became the first state to prohibit building schools within five hundred feet of major roads.

Cross-country markers on the edge of the Azusa High School campus, less than fifty feet from the freeway.
Photo: Fred Ariel Hernandez, 2022.

We also draw on seventy interviews conducted with undergraduate students at University of California, Irvine between 2022 and 2025. These interviews were carried out with students in Anthropology 25A: Environmental Injustice, a large undergraduate course at UC Irvine taught by Kim Fortun, one of the authors (Tebbe) and others (Fortun et al. 2023). The course itself is an experiment in late industrial ethnography, and highlights students' experiences within contemporary school infrastructures. Here, we describe two forms of toxic infrastructure—water sources and turf fields—before returning to the value of late industrial ethnography for witnessing and understanding toxic infrastructures.

Water Infrastructure

Water fountains, potent symbols of segregation in the United States, now illustrate the uncertainties of late industrial toxicity. "Do not drink" signs—along with narratives about how you should not drink tap water (Balazs 2011)—are everywhere in older schools. One student from the San Joaquin Valley, a heavily agricultural region of California, shared her memories of such signs:

> *The only exposure I had to the danger of pesticides would be in our bathrooms. The sinks would have a sign that said "Do not use for formula for babies," "Do not drink water," or "External use only." That's something I distinctly remember was in my high school. But also, it was like the pipes that were next to it were like the water fountain. So, which one is which?*

Aging concrete water fountain near the sports fields at AHS. Plant matter collects in the center. Two spigots function, one is missing, another rusted.
Photo: Fred Ariel Hernandez, 2022.

A handwashing basin at Azusa High School with a sign above it warning users not to drink the water.
Photo: Fred Ariel Hernandez, 2022.

A newly installed filtered water bottle-filling and handwashing station at Azusa High School.
Photo: Fred Ariel Hernandez, 2023.

At AHS, the sole water fountain available to Junior Varsity American football, soccer and track athletes is an aging concrete relic. There is no sign or message indicating whether the water is potable, but it works just fine when the handle is pressed. Across the AHS campus, some fountains are neglected and others have been updated. Some have visible filters and some warn of non-potable water, but none share detailed information to explain why students and staff should not drink the water.

When some water fountains are updated and others not, or when only a portion get "non-potable" warnings, it produces distrust and toxic uncertainty (Auyero and Swistun 2009). At the school, repair requests are relayed up the 'chain of command' by coaches, teachers and cafeteria staff, while principals and administrators send decisions down. Students are almost entirely excluded from this process. This echoes the "disassembled" context of late industrialism, where "various parts never come together" (Fortun 2012: 454). Even maintenance staff, who are most responsible for day-to-day fixes and upgrades on campus, are not privy to district-wide replacement plans. Given the piecemeal repairs and intermittent institutional communication, decisions about which fountains are safe or unsafe are often based only on the fixture's appearance.

Artificial Turf

Across the United States, schools are 'upgrading' their fields to artificial turf. Often touted as a water-saving measure, especially in drought-prone regions like Southern California, Los Angeles includes artificial turf in its definition of green space. This turf also eliminates the costs associated with watering, tending and manicuring living

Close up of AHS's turf field. Pellets are visible in between the blades of artificial grass. Photo: Fred Ariel Hernandez, 2023.

grass. AHS installed its turf field and track partially in the hope that it would help attract new students and enrich existing students' experiences, combating sharply declining enrollment. Almost without fail, everyone saw artificial turf as an exciting new investment compared to the old dirt track and pothole-riddled grass field

Late industrialism is not just about aging infrastructure. It is also about 'new' technologies, still dependent on fossil fuels and toxic chemicals, upon which "consumers [come to] love and depend" (Fortun 2014: 311)—like artificial turf. Students, especially athletes, know that turf can be harmful. When the ambient air temperature is 95°F/35°C, turf can reach as much as 160°F/72°C—hot enough to feel it through shoes and cleats (Aubrey 2008; Knox 2022; Munoz and Manthey 2022). One student who played high school football in Texas described his strategies to cope with the heat:

> *A foot above the turf field … you could see the air waving. And it was definitely talked about, we would purposefully spill water on the turf to cool it down and stuff. And then we would try our best to not lay on it until we put our wet shoes on the turf.*

Despite this knowledge, turf is "just something we deal with"—the heat is part of the price of having a field that symbolizes modernity and care for the school.

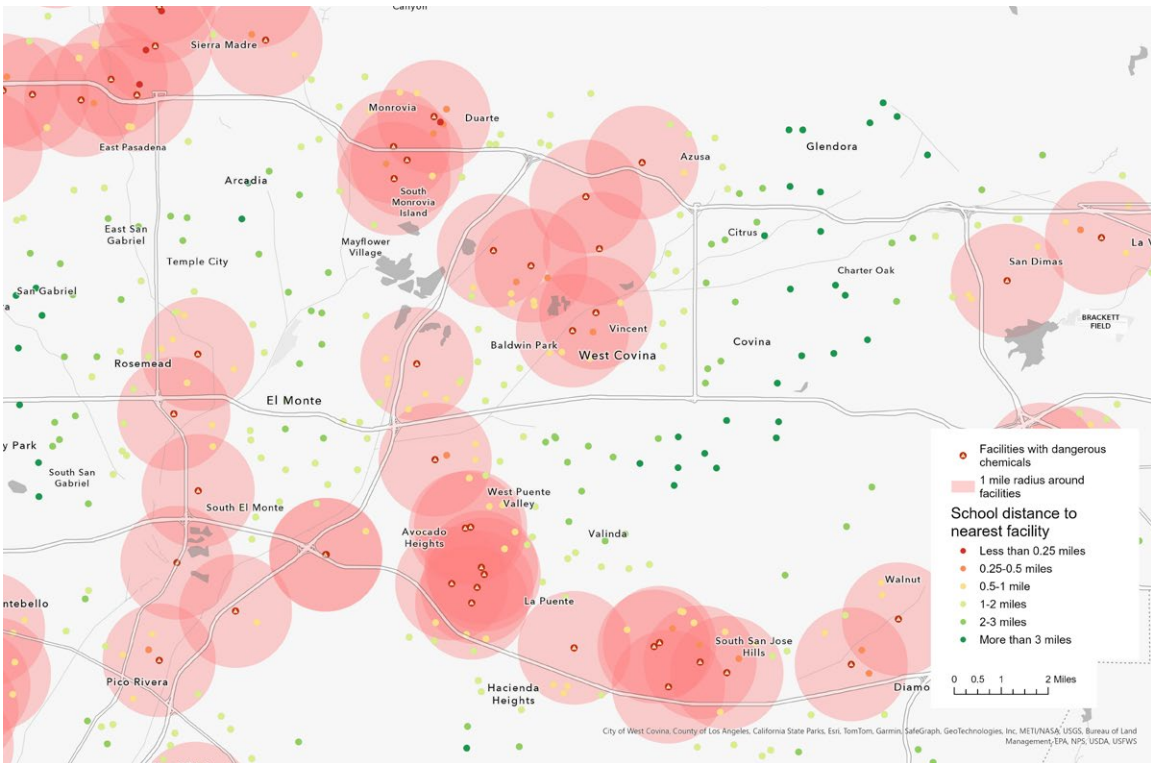
Pellets being tracked off the field at Azusa High School. These pellets can travel across campus and even to students' homes. Photo: Fred Ariel Hernandez, 2023.

Turf has also been linked to carcinogens and other toxins, but these concerns are much less well known (Llompart et al. 2013; Duque-Villaverde et al. 2024). Turf fields contain rubber pellets that help the plastic grass stay upright. When students discussed the problems these pellets presented, they focused on the "mess" that they made—not how they break down and release chemicals on contact, a toxic feature that the students are not necessarily aware of.

Conclusion: Ethnographic Attention and School Infrastructures

Thus far, we have focused on our ethnographic observations of inattention and uncertainty around toxic exposures in and from school infrastructure. This toxicity comes from many sources: aging infrastructure, piecemeal repairs and new technological fixes. Our awareness is diverted away from all of these by the appearance of modernity: a fancy new water fountain or a turf field. Late industrial ethnography, however, promises more than a diagnosis of what is—it also speaks to what should be. The design of our research should support our interlocutors' ability to address both of these arenas. A key task for ethnographers, then, is to build educational programs—for K-12 students, undergraduates, and adults—that support such modes of inquiry.

One example of such work is Anthropology 25A: Environmental Injustice. Students often come into the class without the tools to perceive or understand toxic infrastructures in schools or communities, and a central goal of the course is to foster this analytic ability. It centers on students developing group case studies of environmental injustice in and around a California school that they select. Student work is supported by a variety of tools designed to make late industrial hazards visible and to envision futures beyond late industrialism not yet imagined. These tools include digital maps built by one of the authors (Tebbe) that bring together public and private environmental data and analytic exercises called sketches, which provide a 'light structure' for students to explore many different types of data and knowledge without overdetermining what they will find. The course has spawned many offshoots, including a state-sponsored high-school curriculum and several high-school internships, one of which took place at AHS.



Risk Management Plan facilities (in red, with a one-mile radius) and schools near Azusa. RMP facilities use dangerous chemicals, such as hydrofluoric acid. Map: Margaret Tebbe, 2024.

The interviews conducted with Anthropology 25A students can be understood not just as evaluation or ethnographic data gathering, but as a tactic for developing students' reflexivity. During our interviews, students are asked to describe environmental problems in their own communities and schools. The process of articulating their experiences with toxicity—with prompting from the interviewer—combined with their work in the course helps them see things that they would not otherwise have noticed or understood. Late industrial ethnography calls for a move beyond diagnosis to the generation of novel futures, in part using methods like interviews to collaboratively create new insights with interlocutors. In Anthropology 25A and other internships and curricula, the authors have witnessed how this benefits students as they develop confidence that they can use what they have learned in combination with their own skills as engineers, doctors, educators and social scientists to understand toxic infrastructures and challenge toxic futures.

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