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Logics of Metal Containment

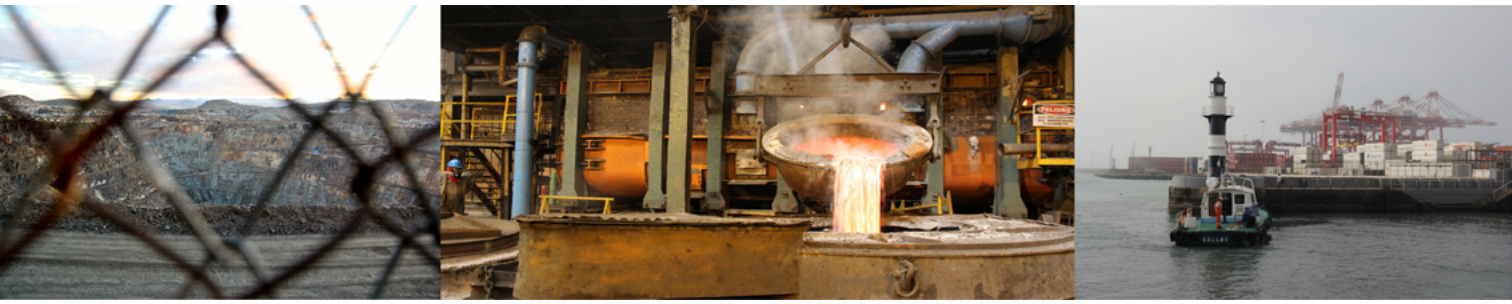
Stefanie Graeter

What makes a metal? What does it contain? What contains it?

To mine metals in the Andes, mountains invert into craters, as bulldozers slowly harvest their earthly wares truckload by truckload. The elemental chaos of extracted slurry then passes through a complex maze of industrial alchemy – gigantic cauldrons, rotating molds, webs of piping, red-hot furnaces, cooling pools, ventilation ducts – intricately assembled to kinetically purify polymetallic mud into copper, lead, zinc, precious metals and rare earth minerals.

Upon achieving elemental distinction, trucks and trains shuttle the mineral particulate along the path of gravity, down the steep, winding cordillera, and then pause, just short of the sea, at Peru's port of el Callao.

Here, weary metals are offered temporary respite. In the expansive storage yards of the port, they are sculpted back into minute mountains, where they wait, until a conveyor belt glides them to shipping containers, which towering cranes heave onto ships that will float them seaward toward futures of further commodification.



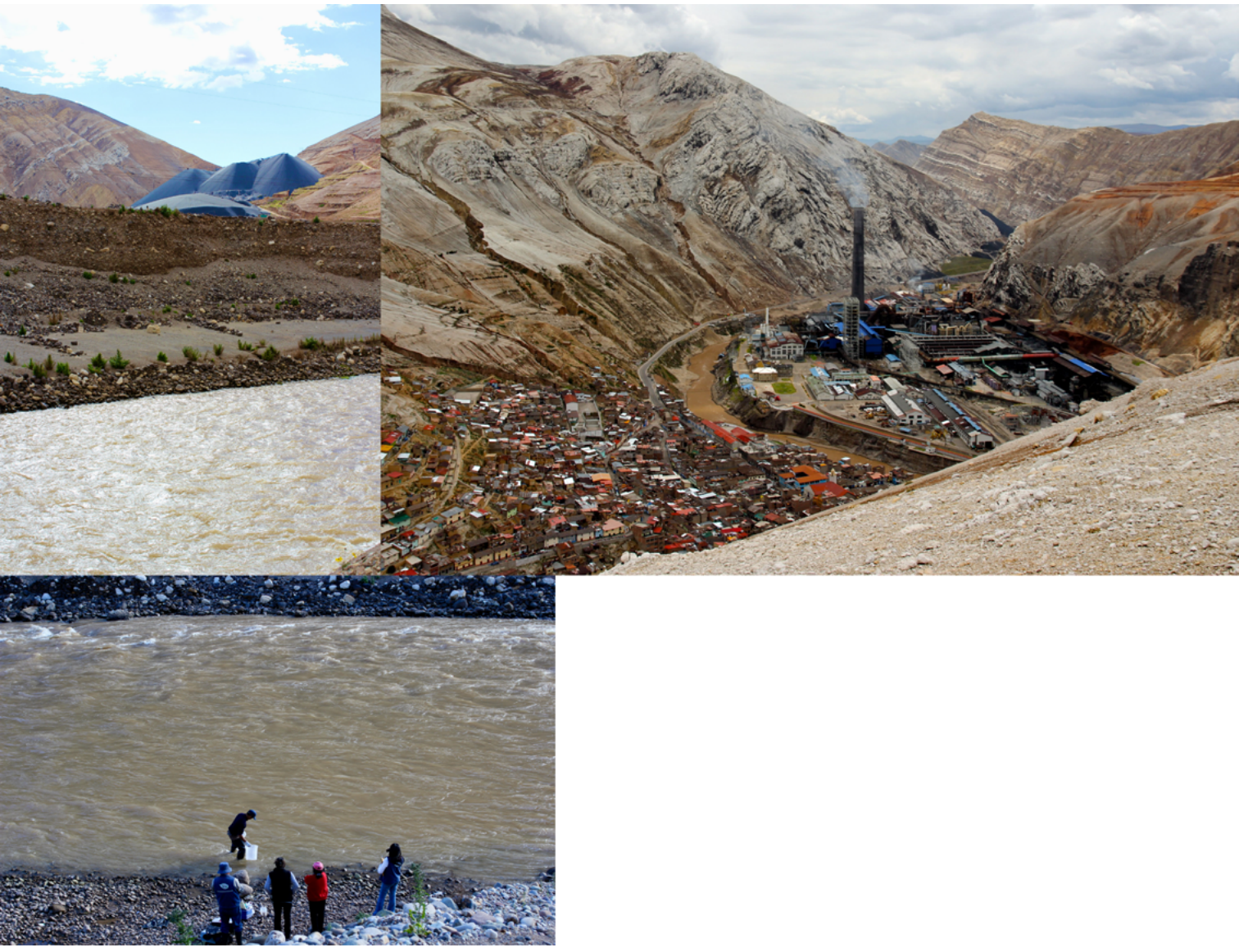
Metal purge.
Photos: Stefanie Graeter, Cerro de Pasco, La Oroya, El Callao, Peru, 2012.

Reversing Douglas's "matter out of place" (2002: 44), her definition of dirt as the symbolic disorder of material worlds, metallurgy overcomes the entropic vagaries of geologic time to precipitate order from molecular chaos; its product, metals in their place, purged, sorted and stored, are rendered ready for global commodity chains – for future pipes, cables, wires, beams, batteries, televisions, tablets, computers and phones.

While containment defines this logistical assemblage, the high energy demands of molecular sorting obliges a counter-energetic release of chaos: spills, seepage and absorption of metals are also constitutive of metal-making logistics. From extraction to shipment, rogue metal particles diffuse into environs, infiltrating eyes, skin, noses and mouths that cross their paths. Such unwitting metallic infusions turn bodies into heavy metal deposits, a long-term fleshy depository for particles otherwise logistically impractical to contain. This dispersion and corporal containment follow physical laws, but their materializations flow from social ones. Hermetic containment of metals, whether in smelters, trucks or storage yards, costs energy. And energy costs money. The logistics of storing and shipping metals is thus not only a techno-physical feat, but embedded with value calculations of spillage; how much metal is really worth containing, by what and by whom?

Among metallurgy's dispersants, lead is the most infamous. A structural analog to calcium, lead stealthily subs in for this vital mineral, leadening blood, brain and bones, while subjecting bodies to an array of injurious becomings – oncological, orthopedic, neurological, cardiological... The heavy metal's capacity to impair brain development, especially in the forming bodies of children, is the most studied by scientists and the most feared by their publics (Lanphear et al. 2005). Much has been done to contain lead better. Lead is now forbidden entry into many consumer products, but its material legacies, and ongoing uses in things like batteries, bullets, x-ray vests, weights, fine crystal and stained-glass, keep lead in material circulation, particularly at sites of extraction, shipment and storage.

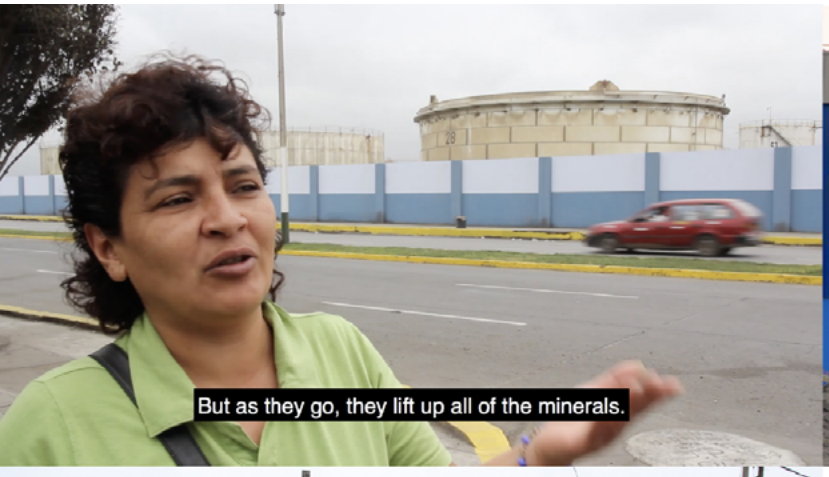
The pervasive condition of lead toxicity along Peru's mineral corridor came to light during the rapid upscaling of metal extraction by way of neoliberal economic reforms. Studies by the World Bank and USAID (Gittelman et al. 1999; Espinoza et al. 2003), Catholic scientists (Universidad de San Luis 2005),[1] NGOs (Arriarán and Salazar 2015) and Peru's Ministry of Health (MINSA and DIGESA 1999) have repeatedly evidenced scandalously high blood lead levels. Unwittingly, the bodies of thousands of people serve as collateral infrastructure (Simone 2004) for metal commodity production: storage vessels for lead that no one bothered to contain.

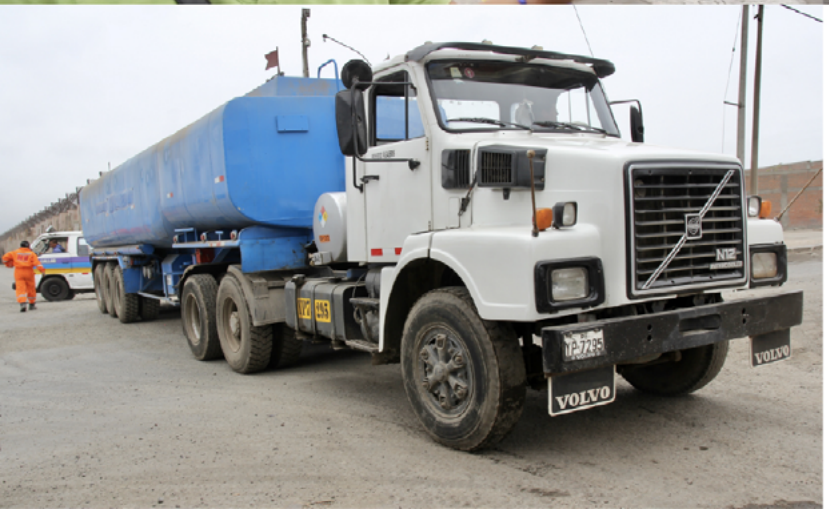


Calculations of dis/containment.
Photos: Stefanie Graeter, La Oroya, Peru, 2012.

Those who dwell amid the mineral scatter of extractive capitalism encounter lead as an ever-lurking, invisible potentiality – it may or may not be in each breath, bite or touch. Take the Port of El Callao, the terrestrial waiting room for metals about to cross the Pacific. Tens of thousands of people have built homes there, both before and after the mineral storage yards occupied adjacent plots of land. This is where scandalous lead levels in children were first discovered in 1999 due to decades of contamination.[2] Yet few in Peru consider the logistical centrality of the port, and the people who live there, to the neoliberal boom of transnational extractivism and the corresponding dis/containment of its noxious matters.

My friend Camila, a local resident and community leader, has fought for years against the lead problem in El Callao. In 2012, she took me to an unmarked intersection of the wide thoroughfare Contralmirante Mora at the port, where we filmed trucks driving in and out of the mineral storage facility of Perubar for a film about the so-called lead zone. She pointed: “Look, right there are trucks exiting from Perubar that are sealed, but as they go, they lift up all of the minerals.”





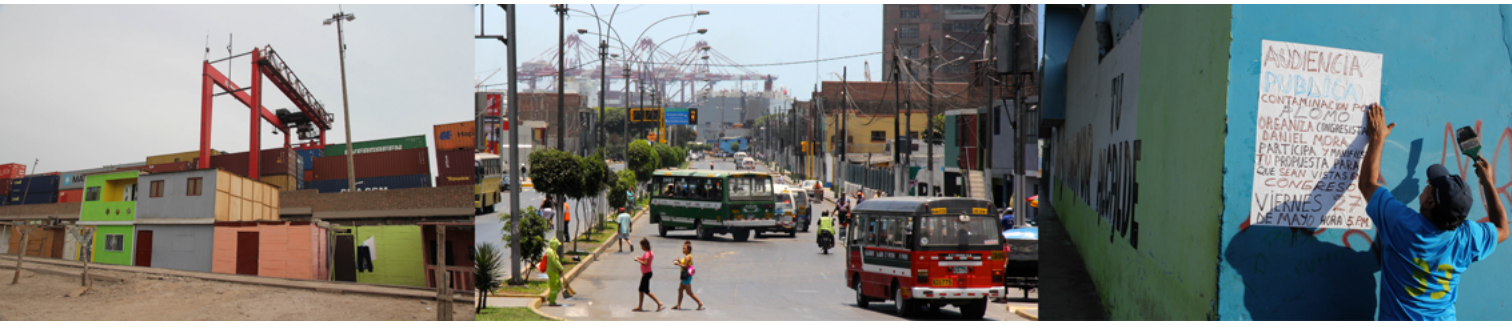
As if to demonstrate her words, this scene unfolded before us: Along the dusty road, an elderly man slowly pedals a bike, balancing a full plastic bag on the handlebars. He is dressed in jeans, flannel shirt, work boots and a baseball cap pulled low over his brow. Ahead of him, a large truck starts backing up, blocking his path and, as he nears, the reverse acceleration of the front wheels envelops his body in a cloud of dust. He has no choice but to stop. He breaks, throws his legs off the pedals, and his weight falls delicately to the right. He waits no more than three seconds, as the particulates settle upon him. Enough time passes to take a deep breath, but then he is quickly on his way. The dust scatters back down to earth, led this way and that.

Eating minerals.
Photos: Stefanie Graeter, El Callao, Peru, 2012.

"Look at the dust storm they make!" Camila called out. "That's dust with minerals! This is the route our children have to walk along every day!" As I set up for another shot, Camila chats up a young watchman, seated in a folding chair on the sidewalk. Camila calls to him playfully: "You're eating minerals for breakfast lunch and dinner! Your bones are just filled with them." The man just laughs, shaking his head.

This brief encounter – between man, bicycle, truck, friction and dust, laughing about eating minerals, kids walking home from school – exists within the making of metals. It is a logistical scene of metal dis- and re-containment: spill, spatter, subsume. It materializes logistical choices of metal containment, as well as their inverse: what the state and corporations deem unworthy of containing.

When lead was discovered at the port, the residents were angry. Their lives were hard enough: many lacked deeds to their homes, and were without access to sewage, water, electricity, or enough work and money to go around. In the social strata of human value, port residents occupy the racialized, classed, bottom rungs of *los pobres* (Spanish for 'the poor'). In the nation's imaginary they are among the most destitute and dangerous, the least deserving of prosperity and protection. Yet the magnitude of the lead levels found in their children's blood horrified the press, public and politicians more readily than their other troubles. Lead got them noticed, so residents organized around it. They held protests, got on TV and in the papers, blockaded roads, yelled at municipal meetings, got in the faces of corporate managers. The lead had to go, they proclaimed, but they also wanted indemnification for the harm already done.



Port containers.
Photos: Stefanie Graeter, El Callao, Peru, 2012-13.

Their collective manifestations produced costly chokepoints in metal commodity flows and costly liabilities for corporate welfare (cf. Carse et al. 2018). Simply put, it would cost the companies too much money to prevent contamination altogether or to remediate its damage. As such, containing the political potential of their human infrastructure of lead storage became essential to the logistical (and therefore fiscal) viability of metal production. How was it contained then? Companies quelled flareups of social volatility on an ad hoc basis, distributing gifts and favors to keep lead silently contained in bodies. Choreographing distributions of indemnity, without admitting any liability, also made economic sense: such scarce flows of benefits created rivalries and encouraged beneficiaries to silence their competition. Accordingly, many did not earn a cent for their body's lead storage. Meanwhile, companies found technological fixes to better contain metals in their trucks and depositories because, to a certain

point, containing more metals means more money and less lead contamination. But not no lead.

The lead is still there. No one has cleaned the soil, and while improved, the trucks and yards can still leak. Sometimes, local kids hold up drivers leaving the depositories, and scrape out any of the remaining metals from the truckbed to sell on the black market. Lead spreads from house to house, from split sack to the ground, onto skin, up into the air and down again. The financial loss from lead theft is minimal, the management explains, and many residents suspect that the companies, drivers and police are all in on the matter. Logistically speaking, this type of spill is easier, and cheaper, left uncontained. These are the hidden logistics of metal production, the social and material arrangements of decisions not to contain.

Bodies at the port are still containers of lead. Unlike trucks, conveyor belts, cargo ships or depositories, their logistical function is not temporary storage to facilitate transport. Instead, they form a human infrastructure of socially condoned corporal damage, which results from a social logistics that makes harm inevitable and acceptable to reduce monetary costs. These are logistics to avoid further logistics. It is through this logistical choreography of invisible containment that metals get made.

Notes:

[1] To read about the scientific research of the Archbishopric of Huancayo, see Universidad de San Luis 2005 and Graeter 2017.

2 In the first USAID-funded lead exposure study conducted in El Callao in 1998–1999 (Espinoza et al. 2003), which was part of the World Bank's global campaign to remove lead from gasoline, researchers found blood lead levels in children of between 1 µg/dL and 64 µg/dL, with a mean value of 9.9 µg/dL. The Centers for Disease Control and Prevention's (CDC) current "reference value" for elevated lead levels in children is 3.5 µg/dL (CDC 2021).

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Stefanie Graeter is a cultural anthropologist interested in ethnographic questions of embodiment, materiality, knowledge and the political, with a geographic focus on Peru and the Americas. She is Assistant Professor of Latin American Studies and Anthropology at the University of Arizona. Her current book project, Mineral Incorporations, examines how lead toxicity is operationalized politically within social projects that resist – or support – Peru's extractive industries. Through an ethnographic examination of the social and material processes that bring bodies and minerals into relation, her work conceptualizes the politics of environmentalism, health and human rights within the noxious environs of racial capitalisms and post-Anthropocene worlds. In addition to ethnographic writing, she works with photography and film, including the short documentary, The Lead Zone.

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