

# Geographies of Nowhere: Smelertown and the Rising Wave of Environmental Refugees

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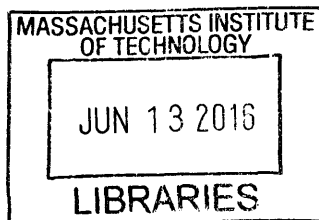
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**ARCHIVE**

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## ABSTRACT

We don't often think of modern American communities as places that disappear. But lead pollution erased the tiny Texas community of Smelertown from the map. And Smelertown isn't alone. Across America we've scraped communities from the landscape, smudged them from our memories. Pollution made these places unfit for human habitation. It turned the residents of these communities into environmental refugees. Another kind of pollution - climate change - threatens to push even more people from their homes. That these communities are gone is tragic. That there are billions of climate change refugees poised to join these environmental refugees is terrifying. What can we do to stop this tide? What can lessons can we learn from the towns that have already disappeared? What lessons can we learn from Smelertown?

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## A Town Called Smelter

"There's nothing here," I tell Ruben Escondido, my guide to the little patch of earth that lies at 30 °47 '38 North 106 ° 31' 36 West. The GPS coordinates lead to a few dry and dusty acres of Texas plain separated from the roadway by segments of fatigued chain link fence. The fencing suggests that you probably shouldn't be there, but it's not going to work hard to keep you out.

A sign at the turn in from West Paisano Drive cautions that this is a flood control area, to be prepared for sudden inundations. The sign reads like satire. It's so dry here. My northeast sensibilities are so inculcated by a humid continental climate that I find myself wishing for a small flood. The average annual rainfall in El Paso, which is where I am, is 8.625 inches. It's a quarter of the annual rainfall of Boston, from where I'd come.

"I told you," said Ruben in a slow surfer's cadence. His speech pattern is marked by a diphthong shift – a mashup of two vowel sounds. In Ruben's case it turns "think" into "theenk," a sound that are hallmarks of both Chicano English and the California Shift. Ruben is El Paso born and raised; in fact he grew up in a community just over the ridge. He has black hair, buzzed close enough to his head that you can see his scalp, tan skin, and slightly protruding ears that seem permanently attached to his Bluetooth headset. An ordained minister who also runs a wedding planning business, Ruben's sentences are frequently interrupted by calls from prospective brides.

On email and over the phone Ruben had warned me and a Google Earth search had confirmed that there was nothing there, but I came anyway. A town of as many as 2,500 people had once resided here. Kids used to play across the desert landscape. There were adobe houses built by hand, and passed down for generations. And it was just gone. It was a fact that I couldn't fully wrap my head around until I stood on the spot, and touched the historical marker. It was all that remained now.

"The Kansas City Consolidated Smelting and Refining Company Came to El Paso in the 19th Century," the marker reads, "creating a mining and smelting center for the Southwest. In 1899, The American Smelting, and Refining Company (ASARCO) bought the operation and refined lead, copper, and other ores. The need for a large labor pool brought in thousands of Mexican immigrants; these workers established homes for their families on community land around the Smelter and developed a dynamic community called Smelertown, or La Esmelda."

We don't often think of modern American communities as places that disappear. We tell ourselves that the ghost towns which litter the landscape like scraps of paper after a tickertape parade are the result of boom towns' gone bust. They're places where people chose to leave, to seek their fortunes elsewhere, after an industry dried up. Places where human caused environmental pollution and hazards forced residents to leave because staying would have killed them, or at least made them sick, those places are freakishly rare. Right?

And yet, once you start looking for them, environmental casualties start appearing with alarming frequency. You discover communities like the Niagara Falls neighborhood of Love Canal. There developers had built homes and a school atop a toxic waste dump - unbeknownst to the community's eventual inhabitants. Birth defects, miscarriages, and, in the late 1970's, evacuation followed.

In 1992, Brio Toxic Neighborhood in Harris County Texas was demolished after the discovery that the toxic waste materials and unprocessed petroleum from many chemical companies had been stored in nearby dirt pits. The pits might have been tolerable, if they hadn't leaked into the subdivision's groundwater. The chemicals - sweet smelling 1,1,2-trichloroethane, fluorene, styrene, , toluene, and ethylbenzene - were linked to leukemia, birth defects, and a host of other health effects that ultimately led to the community's demise.

In 1984, under orders by the EPA, Gilman, Colorado residents abandoned their town because of toxic pollutants and contaminated ground water linked to the local lead and zinc mine. Water contamination is particularly visceral because it's often tasteless and an adulteration of a substance so critical to life.

Gilman's fate also befell the town of Picher, Oklahoma. In 1996 Picher, a town in northeastern Oklahoma on the Kansas border, discovered that roughly a third of its children were suffering from the effects of mine-related lead poisoning of its water supply. On September 1, 2009 the state of Oklahoma officially dis-incorporated the city. The town dissolved its charter in 2013. As 2014 although 10 people still cling to their homes - refusing the federal buyout - for all intents and purposes Picher is now a ghost town.

Similarly, a bit to Picher's north, American Power, the utility that operates the two coal-fired power plants that abutted the Ohio village of Cheshire, grew weary of resident complaints that the plant put out pollution that coated their homes and constricted their lungs. So the company purchased the 499 acres of this once bucolic hamlet for \$20 million dollars, scattering the residents to surrounding communities.

And the list goes on.

Like Smelertown, the fates of these communities were sealed not by market forces, or personal choices, but because of environmental degradation. When looked at this way, its people are not just the objects of unfortunate luck. Rather, they are "environmental refugees," a term used to describe those forced off of their land due to environmental factors, usually human caused. Although the term "climate refugees," a specific subset of the concept of "environmental refugees," has in recent years garnered attention, the two ideas are intertwined. People - often incredibly vulnerable people - are being pushed off their land due to human caused environmental harms.

“Many people see the migrations as very distant, both geographically and as something that happens in the future,” said Gemmene a political scientist with Science Po in Paris. “They don’t consider them as a sort of reality only as a distant threat in the future that won’t affect them. This is a key mistake. It’s already a reality.”

In ancient mid-east societies nations adopted the symbolic practice of ‘salting the earth’ of conquered cities. Most crops can’t grow in saline soil so the practice in an era where people primarily grew their own food, essentially made the locations unlivable. What it didn’t do, however, was poison the inhabitants at the same time. Modern society, it seems, has done an adept job of not just salting the earth but also sickening her residents. What’s odd is that ancient societies did this to their enemies. We’re doing this to ourselves.

Regulations seem more effective at staunching the flow once the wound is made, then preventing injury in the first place. This is alarming, because climate change is adding additional pressure. A 2016 report in the journal Nature Climate Science found that by century’s end 2.5 million Americans will have to flee their homes. “The absence of protective measures could lead to US population movements of a magnitude similar to the twentieth century Great Migration of southern African-Americans,” wrote the study’s authors.

Understanding the risks our communities will face under climate change requires that we understand the many ways in which our communities are already imperiled. And existing environmental degradation is a critical piece of that puzzle, especially in places that like Texas and much of the Southeast are already at economic and social disadvantages. Climate change will likely reinforce those impacts – not ease them. And for that, it’s useful to look at Smelertown.

## **A Geography of Nowhere**

Smelertown’s history begins in 1887 -- the same year that a marmot named Phil made his debut in the small Pennsylvania town of Punxsutawney, ushering in the nation’s first Groundhog Day. Phil’s prediction that year was for a long winter. But in this part of Texas, on the western edge of the Rio Grande, where Texas kisses New Mexico and the United States melts into Mexico, the weather was sunny and warm and the future looked bright. That year Robert Safford Towne, the mining industrialist who would eventually help build the Mexican Northern Railroad, secured the backing of the Kansas City Consolidated Smelting and Refining Company to build a smelter on the dusty outskirts of El Paso.

Towne had first arrived in the area in the 1880s after touring the ore mines just across the border in the Mexican state of Chihuahua. Though outside of Mexico Chihuahua is best known for its tiny breeds of dogs, the region was, and still is, abundant in minerals - silver and copper, iron and lead – that were much in demand in the United States and beyond. Shortly after his tour of the Mexican mines, Towne erected a small plant along the banks of the Rio Grande, that he called the Mexican Ore Company. The facility sampled and

graded ore from the Mexican mines, a necessary service because no vein of mineral deposit is uniformly rich. Sampling, or taking ore from different locations across a mine, and grading, assessing how much valuable ore a sample contains, allows a mine's owner to know which veins can be mined profitably, and which veins are better left untapped.

Towne's early success with the Mexican Ore Company and his own business acumen made him realize that the location, at the crossroads where Mexican ore moved north to the United States, and western American ore moved by rail to the industrial east, would be ideal for a smelter, the process by which rock ore is turned into a refined metal. Much as Ray Kroc would learn half a century later that it's cheaper to ship a burger and fries than it is to ship the beef and potatoes needed to create a Happy Meal, Towne grasped that it was cheaper to ship a cargo of bullion, than to ship twice as much of the ore. A smelter placed there could undercut those located further away by reducing transportation costs.

The region's climate, too, was ideal. A 1961 newsletter published by the successor to Towne's smelter wrote, "El Paso's economy has often been expressed as "The Five big C's - Copper, Cotton, Cattle, Clothing, and Climate. The last of these - climate - can be said to be the cause of the existence of the other four."

Any place that receives less than 20 inches of rainfall a year qualifies as a desert and El Paso is no exception. It lies within the Chihuahuan desert, the second largest desert in North America. Deserts, like ice cream, come in flavors. Though many of us think of deserts as hot, inland, places, some like the deserts found in Greenland and Antarctica are very cold, and are called, somewhat uncreatively, "*cold deserts*." Others, like Chile's Atacama Desert, rest along the coast. As one might expect, they are called "coastal deserts." But the Chihuahuan is a stereotypical desert in that it is hot and dry. Because El Paso lies at an altitude of 3,672 feet its summers are comfortable, its winters mild, and the sunshine near constant. "The altitude and low humidity make the area a haven for those suffering from respiratory ailments," notes the newsletter.

Armed with funding from the Kansas City Consolidated Smelting and Refining Company, Towne bought 1,156 acres across the Rio Grande for \$3,757, roughly \$92,000 in 2015 dollars. Within five months there was a fully functioning smelter and a workforce 250 souls strong dedicated exclusively to smelting lead.

Metal is a hallmark of modern life, - the thin, flexible, sheets of aluminum foil that we use to wrap baked potatoes, the thin copper wires that wind their way through our cell phones, the steel screws that hold our furniture together - are marvels of human ingenuity. Refined metal is a relatively recent human invention - developed after agriculture. Metal's abundance is even newer. Though we now casually use and dispose of metal after a single use - in a can of soda perhaps, or a tin of sardines -- metals, all metals used to be precious. Arrowheads were removed from broken shafts, screws carefully unscrewed and saved for reuse. Even as recently as 2012 a New York Times article reported that manhole theft in New York City was on the rise, while in 2015 China had to resort to GPS tracking technology keep control of its metal covers. Metal is valuable. The reason is simple. Metals

rarely emerge from the ground ready to use. Most come out “dirty,” masses of material intermingled with other minerals and metals. Separating out the metals we want from the materials that we don’t is not as straightforward as simply giving them a good rinse. The process of transforming ore into metal is expensive, messy, and both labor and resource intensive.

Driving out the offending impurities from a given quantity of ore typically requires heating the ore to high temperatures - 680°F (364°C ) for zinc, 1200°F (650°C) for copper, and between 1600 and 2200 °F ( 900-1250°C) for lead. These flaming temperatures don’t just melt the ore, they chemically transform it. For example, when chalcopyrite, a common ore in which copper is found, is heated at high enough temperatures oxygen in the air binds with it forming copper, iron oxide, and sulfur dioxide – the same chemical that emerges from volcanoes when they erupt. Smelting lead, which is typically found as *galena*, a shimmering black ore, also produces sulfur dioxide.

Towne probably picked lead for two reasons. The first was its market value. At the time, lead had many uses. The metal was used in ammunition, burial vault liners, ceramic glazes on plates and vases, glassware, paints, water lines and pipes. Pb, the chemical symbol for lead, comes from *plumbum* the Roman word for lead. The Romans were the first to use lead for plumbing. After World War I, its uses expanded appearing as engine starting lead-acid batteries in cars, radiation shielding in medical devices, and an antiknock agent in gasoline. In 1923 the National Lead Company released children’s coloring book, titled *The Dutch Boy’s Lead Party*. The book tells the story of the story of the Little Dutch Boy, the mascot for Dutch Boy White Lead Paint, who throws a party for all of his lead containing friends - a light bulb, a toy soldier, bathtub tiles, and rubber-soled shoes - all joined in on the fun.

The second reason for lead as Towne’s metal of choice was pragmatism – lead is incredibly easy to smelter. If you place galena rocks in a suitably hot fire it can easily be collected from the ashes once it cools – no additional processing necessary. And generating a suitably hot fire is a straightforward procedure. Towne erected a 100 foot smokestack to increase the flow of air into the furnace allowing it to burn at the high temperatures necessary for smelting lead. The furnace itself was powered by coal. The profits that could be generated from smelting lead could be turned into smelting other metals that required more extensive – and more expensive startup costs.

In 1899 the American Smelting and Refining Company (the company officially became ASARCO in 1975), bought the smelter from Towne and expanded its production from smelting lead to processing copper and zinc. Because zinc and lead frequently contain not only small amounts of metals like copper, iron, zinc, but also significant amounts of sulfur, before being smelted they undergo an additional process called sintering, a form of hot air combustion, to remove the sulfur.

Residents mostly from Santa Rosalía in Chihuahua, Mexico flocked across the Rio Grande as the number of jobs expanded from 250 in 1887 to 2,000 in 1899. While the

smelter pulled migrants from Santa Rosalía into the region, it was water that pushed them. In a desert area drought is always a risk, but the region's economic inequity concentrated the impacts of water scarcity. Santa Rosalía's water rights were controlled by a handful of wealthy farmers. Land, and more importantly, water rights were so concentrated that this inequity was partially the impetus behind the Mexican revolution in 1910. In 1899, however, the subsistence farmers and sharecroppers were blocked from irrigated water supplies and were instead wholly dependent on rainfall. In the 1890s that rain rarely came. Chihuahua was racked with a persistent drought that caused starvation across the region. The drought made a job – even a dirty job at the smelter – all the more appealing.

A European Commission report notes that, “the links between environmental changes and migration are extremely complex. Migration is often the result of a variety of layered causes – economic, social, and political – which are accentuated by changing environmental conditions as well as frequently by developmental and demographic conditions.” It's a complexity we can see at play in El Paso. What if Santa Rosalía, if Mexico, had not been hit by a drought? Perhaps the revolution of 1910 might not have happened. What if land and water access been more equitably distributed? The residents of Santa Rosalía might have been disinclined to leave home. What we know, however, is that the drought did happen, water was scarce, and Santa Rosalía residents headed north.

Crossing the border from Mexico into El Paso may feel fraught in an era where the borders are vigorously patrolled, intrusions are seen as a threat to American security, and a two thousand mile wall on the border of US and Mexico appear to many as sound foreign policy. But in the late 19<sup>th</sup> century, crossing the border didn't much differ from crossing state lines. After all, El Paso had originally been a part of *Paso del Norte* in Mexico. It only became a part of Texas after the Mexican-American War of 1846-1848 when Mexico lost half of its territory to the United States. Fifty years post-war, El Paso remained connected to its sister city across the river, what is today Ciudad Juarez. The two were united by language, culture, and history. And while it may seem odd to have so many people from the same community uproot their lives – this is often how immigration works. People leave for economic opportunities but don't want to leave the communities or connections behind.

Today a roadway separates the land once occupied by Smelertown and the Asarco smelter, but in pictures from the 1950s the line separating the community from the smelter was fuzzy. The immigrants from Santa Rosalía built their homes, squat adobe structures, in the shadow of its smokestack. The houses were built on land owned by the smelter, which Asarco retained control over, though residents owned the houses, passing them down to successive generations, expanding them to fit growing families and changing fashions. The smelter itself occupied high ground – an upward slope with intermittent plateaus that lead into the Franklin Mountains to the east. The site featured the smoke stack and the furnaces – six of them - along with bedding plants that blended together the metals with various concentrates, or chemicals that were added to facilitate the chemical transformation from raw ore to refined metal. Eventually ASARCO built a waste water treatment facility when pouring waste directly into the Rio Grande became unacceptable. At one time or another there was an antimony plant and a sinter plant and for a while the ASARCO plant in El Paso



was the world's largest custom smelter in the world. And for reasons that probably seemed a lot more practical at the time, the site also held Smelertown's cemetery. Esmeltianos, as Smelertown residents called themselves, dug the graves themselves.

The immigrants from Santa Rosalía created Smelertown just west of the smelter on the banks of the Rio Grande. This was back when the Rio Grande still lived up to its name of Grand River, when as much as 1 million acre feet of water a year – enough water to fill 500,000 Olympic sized swimming pools - could come gushing down the channel of the nation's fifth largest river. On maps, the Rio Grande tramps its way some 1,900 miles, springing to life somewhere in Southern Colorado's San Juan Mountains, cutting across through New Mexico, before entering Texas where it traces the state's and the nation's southern border with Mexico. Along the way it's met by springs, rivulets, and smaller rivers that help to replenish it, until eventually it flows to the Gulf of Mexico. Somewhere in its middle is the invisible line where Texas meets Mexico. Unfortunately a year of aqueous plenty could easily be followed by a year of scarcity, when El Paso saw less than a hundred thousand acre feet of water from the Rio Grande. This variability made it hard for the region's farmers, who depended on river irrigation to eke out a livelihood.

As early as 1874 there were calls to dam the Rio Grande to control its flows. In 1905 the United States Bureau of Land Reclamation, itself first created in 1902, complied. It authorized the creation of the Elephant Butte Dam to store water during drought years, provide flood control from too much runoff, and insuring the delivery of 60,000 acre-feet of water to Mexico. Elephant Butte was built in 1915, putting an end to the Rio Grande's existence as a wild river. Still, especially in the early days, the river brought mosquitoes and occasionally floods that wiped out their homes.

Although the Rio Grande was never deep enough to support oceangoing ships – or even recreational boats – it was navigable by canoes, kayaks, and rafts. In March 1913 an ASARCO smelter worker by the name of Francisco Villa chose to return to Mexico by crossing the Rio Grande with six compatriots in tow, each carrying “a sack of flour, two small packages of coffee, some salt and small arms, but little ammunition” according to historian Leon Metz. Historical descriptions have them “fording” the river. Within a few weeks Senor Pancho Villa and his compatriots would strike a mining camp in Boquilla, Chihuahua firmly launching the Mexican Revolution. A century after Pancho Villa forded the Rio Grande on his way to sparking a revolution it's possible for young revolutionaries to cross the Rio Grande without getting wet.

These days *Chorrito Minúsculo*, tiny trickle, seems a more appropriate name for the Rio Grande. It takes me two days to spot the Rio Grande. I only notice it when Ruben points it out to me – I'd interpreted it as a channelized ditch. The river water's releases from upriver reservoirs are timed with the agricultural season. These releases used to happen from February to October, but lately they don't start until June or July and end as early as a month later. The contractual obligations that divvy up every drop of the river, redirecting them to cities along its course are part of the problem, but the primary cause for the shortage is drought.

In April 2003, the river dried up through Big Bend National Park's Mariscal Canyon in New Mexico. In 2012 rumors circulated that the river had finally run dry in El Paso – it's so frequently dry in the regions south of the City that its name has shifted from the Rio Grande to the Forgotten River. In 2013 the federal Bureau of Reclamation reported that average temperatures in the upper Rio Grande – in Colorado where the snow pack that fuels the Rio Grande emerges – and New Mexico had increased by 2.8 degrees in the 40 years ending in 2011. They also predicted it could rise another four to six degrees by 2100. It's a temperature increase beyond that which anyone has seen in the past 11, 300 years. Texas and Chihuahua across the river in Mexico are in the middle of a drought deeper and even more persistent than the ones Santa Rosalia residents fled a little over a century ago.

### **A place you can call home**

Although Smelertown occupied company land, it was an industry town – not a company one. Company housing, residents also constructed their own adobe brick or wood frame homes on privately owned property in El Bajo, near family and friends from the same villages in Mexico." Esmeltianos left their homes in Mexico but they'd brought their communities with them.

"This community was a very Mexican culture," said Reuben, "It was a Mexican pueblo type of a deal. Everyone knew each other, took care of each other, you could leave your house and not lock your doors, and people had a very close sense of family."

Ruben and I connected because when I reached out to former Smelertown residents everyone told me to talk to Rueben.

"Ruben is the caretaker of Mt Cristo Rey which is a big part of the Smelertown history, as well as a member of one of the oldest families from the town," said Mike Cortez. Now in his early 70's Mike is a former Smelertown resident who runs a website where other former Smelertown residents can connect.

For generations the ASARCO smelter would provide an anchor point, and a point of pride, in the greater El Paso community. Smelter Here is Largest Customs Plant in World reads an October 24, 1929 headline in the El Paso Times. A variation of that headline "World's Largest Customs Smelter is Located Here" would be repeated in the paper in 1931.

"It had a grocery store, even a post office, two bars," said Ruben, "It was a little community within the El Paso city limits."

Though Smelertown is gone, you can see traces of what Smelertown looked like in Spokanyon, a sister community to Smelertown that still stands. It's where Ruben grew up, and his father still lives. The communities were only blocks apart – while Smelertown was

located downslope from the ASARCO Smelter on the banks of the Rio Grande, Spokanyon was adjacent to it in the foothills.

Although many of the homes I'd seen in El Paso have been made of adobe or stucco, Spokanyon's squat adobe houses with sparse dirt yards feel different. They felt old, the community felt old in a way that has more in common with old New England towns than the strip malls that comprise much of the rest of El Paso. Humans have been passing through this corner of the world, mostly without trace for centuries, though the oldest street in El Paso proper only dates back to the mid-1800s. Spokanyon feels steeped in the weight of its time.

Ruben knows everyone in the community and as we drive through he tells me who lives here, who used to live here, and who is moving in. He points to an elevated railroad track and with a chuckle admits "we used to race the trains up there. We'd wait for a train and then when we'd hear one coming we'd run." He nods at the slope beneath the tracks now thick with woody grasses, and notes, "that brush didn't used to be there. It was easier to slide down it."

In 1924, the smelter opened a vocational school on plant property and, "sponsored neighborhood activities, donating money, materials, and labor for a variety of community improvements." After World War II, residents renamed the streets after soldiers from the community who had been killed in the line of duty.

This isn't to say that the community was perfect. ASARCO workers, said Union Organizer Cerefino Anchondo Jr. in a 1977 oral interview, "... were really poor people; very, very poor people with very little education and large families." Anchondo was born in Smelertown but left when he was five after his father was fired by ASARCO and kicked out for union organizing.

And El Paso overall, tended to look down on the community. A June 12, 1943 article in the El Paso Times about the fact that Smelertown had a lower infant mortality rate than El Paso begins, "Smelertown, one of the most unsanitary settlements near El Paso, paradoxically has a lower infant mortality rate than El Paso." An Improvement plan for Smelertown bears the subtitle, "Where El Paso's greatest eyesore is making its last stand." Around the same time the same time El Paso community members met to "plan relief for Smelertown." Notably absent was Commissioner Ord Gary despite the fact that Smelertown lay within his precinct. For a long time the town dump was a heap in a lot located in the center of town. Water was sourced directly from the Rio Grande, and waste was frequently dumped there as well.

Still, In Smelertown, in addition to the company store, "Small Mexican-owned shops ranging from dry goods and groceries to shoe repair, butcher and barber shops in El Bajo created competition for the ASARCO-owned store," writes Perales. There were pool halls, bars, and even briefly a YMCA which in addition to the town Catholic Church, San Jose de Cristo Rey, provided the cultural connections, and personal interactions that provide the

basic foundation of a human wellbeing. From its inception until the end of World War II, Smelertown grew until it spanned 25 acres and 5,000 residents. After the war, the community contracted. By the late 1960s it had shrunk to around 500 people. In the 1890s the plant and Smelertown had once been on the fringes of the city, and by the 1960s, the city had expanded around them. Some saw Smelertown as the first stop on their way towards integration in broader American society. Those who remained felt differently. Smelertown was their home.

In the 1930s Esmeltianos built, both with their dollars and their bodies a 29-foot tall limestone monument of Christ. Formally named Mount Cristo Rey, the statue rests on a hillside some 4,675 feet above sea level, with a base elevation 820 feet above the trailhead. Although the path to the top where the monument rests is only 2.2 miles, it's roughly a ninety minute trek to the top and not for the faint hearted. At least one person has died of a heart attack attempting the trip. This didn't stop the community from not only hauling the materials necessary to make the statue, but also from building the roads themselves. That the statue rests, not in Texas but in New Mexico is a mere technicality. It still looms over Smelertown, watching over the community or at least where it used to be. At the foot of Mount Cristo Rey, just below the boulder with the phrase "The Humble are Exalted" carved into its face, and next to the memory tiles of those who helped contribute to the monument's foundation, are dinosaur tracks. Several hundred million years ago, Hadrosaurs, Theropods, Iguanodons, and Ankylosaurs roamed this region. They, like the Smelertown markers, are footprints of a past that no longer exist. Mount Cristo Rey looks down on them all.

### **Smelertown's Demise**

It was sulfur dioxide that put ASARCO and Smelertown under the magnifying glass. Esmeltianos had long made their peace with the smoke that tumbled from the smelter's smokestack, "When you played football in the street, and you couldn't breathe just right, you knew it was The Stack. You coughed a little, and you cursed it - but you still lived with it," wrote journalist Allen Pusey in a 1972 El Paso Times article about Esmeltianos' relationship with ASARCO and its smokestack. He added, "Obnoxious neighbors can make life miserable, and The Stack was no exception, but they are scarcely noticeable when you have other things to worry about."

The smokestack was not the original built at the turn of the century when ASARCO expanded the smelter's production from just lead, to copper, zinc, and a handful of other metals. In the late 1940s ASARCO built a new, bigger smokestack to increase capacity for future operations as well as to "provide the most favorable dispersion of the smoke, thereby reducing concentration to the point that it is not expected that gases from this stack will reach ground level in annoying quantities," ASARCO plant manager E. McL. Tittman explained to the El Paso Times in 1949. What Tittman meant was that the new stack would allow them to burn hotter and release smaller particulate matter higher up in

the atmosphere. The thought was that the smaller pieces of pollution released further up would be less inclined to trickle back to the ground at lung level.

While the old smokestack was only 225 feet tall, the new smokestack was nearly three times as tall. At 612 feet it stood roughly 100 feet taller than the Washington Monument, a hair taller than the Seattle Space Needle. Painted with thick horizontal red and white stripes it looked a bit like a giant candy cane. In pictures it's easy to forget that what it was spewing was not sugar but pollution. Posed against El Paso's relentlessly blue sky, it harkens back to a time when a smokestack was a sign of progress. In 1954 the stack was chosen as one of the seven engineering wonders of Texas by the Texas section of the American Society of Civil Engineers.

From the viewpoint of Esmeltianos the new smokestack had done what ASARCO had said it would – the air did feel lighter, it was easier to breathe. Esmeltianos blasé attitude towards the stack was not shared by the Coronado residents who had made their homes in the Western hills of the Franklin Mountains, well away from the smelter. They'd been fine with the old smokestack. That smokestack had mostly dumped pollution on Smelertown. This new smoke stack was visibly dumping pollution into their backyards. "Because of the prevailing winds there would be clouds of sulfur dioxide [a byproduct of smelting many minerals but especially lead] that would roll down the side of the Franklin Mountains into Coronado areas that were pretty high tuned residential areas where a lot of the wealthy citizens of El Paso lived," said journalist Allen Pusey. Now with the ABA Journal, Allen Pusey had been a young reporter with the El Paso times in the 60's and 70s. Smelertown was his first big story.

The change came at unique time in American history: In 1962 Rachel Caron's seminal book *Silent Spring* had been released and across the country there was growing awareness of the risks associated with environmental pollutants. Laws had been passed to protect Americans from the worst adulterants of our air and water. In 1969, both the city of El Paso and the State of Texas filed suit against ASARCO alleging violations of the 1967 Air Safety code. While suing ASARCO over the sulfur dioxide they received records showing the other kinds of particulate matter that was coming out of the ASARCO smokestack – arsenic, lead, chromium, and many other toxic metals. As a result, the state alerted health officials who started sampling the area around Smelertown.

"Officials were kind of shocked by not only the kind, but by the amount of particulate matter that was spread around," said Pusey. "They went out and did what health officials should do; they tested the soil and the air and discovered there were high amounts of lead. Very slowly the litigation that had been about sulfur dioxide turned to be focused on lead."

Air and soil testing revealed pockets of lead all over the community, scientists discovered toxic levels of arsenic, cadmium, zinc, and lead dust, on rooftops, in the ground and even on eating utensils of homes located within a seven-mile radius of ASARCO's smokestack. Between 1969 and 1971 tests revealed that the smelter had emitted over a ton

of arsenic and 12 tons of cadmium. Cadmium is a byproduct of smelting zinc that one researcher labeled one of the most toxic elements to which humans can be exposed at work or in the environment. In addition, 560 tons of zinc, and 1,000 tons of lead were also released into the atmosphere. County health officials sent to investigate the extent of those violations they discovered something even more alarming: more than 148 Smelertown children had abnormal, possibly life threatening levels of lead in their bodies.

Forty-three percent of the 223 people living within 1 mile of the smelter had blood levels that exceeded 40mg per deciliter. Four children had blood levels of 80-90mg per deciliter. At the time the Surgeon General determined that that level represented “undue lead absorption.” Today, the CDC recommends that children have no more than 5mg per 100 mL in their blood while also cautioning that no amount of lead exposure is safe. To put this in context, as of 2015 the highest lead level reading in Flint, Michigan – the site of a wide scale lead poisoning event caused by government malfeasance in the water supply – in children was 38 mg per deciliter.

In children lead poisoning can cause developmental delays, learning difficulties, and slowed growth that stays with them for a lifetime. Children who have been lead poisoned can have difficulty in controlling impulses. In adults, lead poisoning can cause high blood pressure, declines in mental functioning including memory loss, miscarriages, and neuropathy. In both adults and children if lead poisoned is left untreated it can cause severe neurological problems including even deaths.

How the kids, who did not work in the plant, were being polluted was something of a mystery. Before Smelertown, lead poisoning and lead intoxication were not much studied. The existing research primarily focused on the ingestion of lead paint by kids in low income neighborhoods. There was not enough evidence to suggest that Smelertown’s children were eating the lead. Others argued that despite the testing the kids were not sick at all. “I had one discussion in an elevator with a doctor’s wife who kept telling me that the kids weren’t sick because they didn’t have any headaches or fevers or anything like that,” said Pusey. “And I remember saying if you have cancer and you don’t know it, you’re not sick? That was the level of what passed for expertise.”

It was Dr. J. Julian Chisolm Jr. of Johns Hopkins who settled on a mechanism of action. Years earlier, Chisolm had pioneered the technique of chelation therapy that uses drugs, often inserted intravenously, to force heavy metals like lead from the body. He concluded that the kids were breathing in the lead - though not directly from the air released by the smelter. Rather, three quarters of a century of living in the Smelter’s shadow had infected the community with lead dust. And because Smelertown had no paved roads, each time the children went outside to play they kicked up a fine layer of dust and breathed it in. This was further compounded by the fact that in ASARCO’s attempts to reduce pollution through dilution the lead particulates had become so small it was easy for them to move from the lungs into the bloodstream. The smaller the particulate was the more dangerous it was. Over time, the children’s bodies became saturated with lead.

A number of solutions to the problem were floated. ASARCO scraped off an 18-inch layer of soil and replaced it with fresh soil, to little effect. The El Paso Chemical Laboratories -- which conducted the analysis for the area's Health and Environmental District -- offered a number of suggestions from sealing the unpaved streets with asphalt to control the dust; to acid washing all vertical surfaces and repainting them with lead free paint, to outfitting homes with air conditioning units to eliminate the use of open doors and windows. But ultimately, the cheapest, most expedient path was selected. In October 1972 the inhabitants of Smelertown, who did not own their homes even though many of the families had occupied them for generations, were given evacuation notices. They had to be out by January 1, 1973. Smelertown's reason for being was also its reason for leaving.

"The people who lived there were sort of torn about it," said Pusey, "On the one hand they were being uprooted from a place that most of them had known most of their lives. On the other hand, they were poisoning their own kids."

Part of it was they trusted ASARCO more than they trusted the government. ASARCO provided many of the basic services that we turn to government for - medical, fire and police services, and access to potable water. The government alternatively ignored them or dealt with them as a problem to be solved. Earlier, the city had closed the local, E.B. Jones School instead of investing in sewer improvements, and now students had to be bussed to other schools 6-7 miles away.

There was also confusion: Smelertown and Spokanyon were incredibly close together. Yet the Esmeltianos were told that they were sick, while those in Spokanyon were told that they were fine.

"That was one of the things that they question," said Ruben, "If there's contamination across the street why wouldn't they have it here in Spokanyon. They never established why the people across the street had it this way."

In this case geography matters -- Smelertown was downwind from the Smelter. Spokanyon was upwind. Smelertown was not paved, Spokanyon was.

There was also confusion about lead itself, said Pusey. "I remember talking to one smelter worker who we were talking at his lunch time, and he says, 'You know I live there and I can't imagine that this is a problem for my kids.' And I said, 'You have a mask on. You wear a mask when you're in there. Do your kids wear a mask when they play?' The look of shock on his face, I will never forget, in that moment he realized that there's a danger here that he was not acknowledging."

Residents were forced to move, their houses razed immediately to prevent anyone from moving back. The other buildings soon followed. A May 1975 injunction ordered ASARCO to make environmental improvements to their plant that would eventually cost \$120 million dollars. In 1999 ASARCO ceased operations in El Paso citing low copper

prices. They kept a skeleton crew on staff in the hopes that prices would rise, allowing operations to resume.

In 2007, amidst bankruptcy proceedings the US government sued ASARCO for more than \$27 million dollars for anticipated costs related to contamination. "The USIBWC (US International Boundary and Water Commission) is forced to face these dangers due to the high contaminant levels that exist and the potential threat to the Rio Grande which serves as both a significant source of El Paso's drinking water and as a vital source of irrigation water," the legal document states.

In 2009 ASARCO sought to renew its air emissions permit to restart the blast furnaces. Amidst widespread protests both in El Paso and across the river in Juarez, the EPA told them no. The facilities were fully shuttered, and the process of dismantling the century's old plant began. In 2013, 14 years after ASARCO effectively ended its operations in El Paso, the stack was torn down. But not before a curious campaign emerged to save the two ASARCO smokestacks. "The stacks are as significant a part of our skyline as Trost's Hilton Hotel - now the Plaza - or Basset Tower," wrote architect William Helm in a 2011 op-ed. Stripped of context, nostalgia has set in at least for those whom the stacks were little more than two towers in the sky. "I think even the modern kids, they saw the stacks as something good," said Eva Ross a volunteer at the special collections library at the University of Texas at El Paso. "They don't see that it took a lot of political action and social change to get the smelter down."

Neither Smelertown nor the site of the ASARCO smelter has been occupied by anything else. Although there has been discussion of placing a soccer stadium on the former site of the ASARCO smelter, neither location is fit for permanent human habitation. Residential use, agricultural uses, and schools or daycare centers are all banned from the sites. Smelertown's cemetery on the ASARCO site is filled with the only humans who can safely reside in the area full-time. We haven't quite salted the earth, but we've come awfully close.

## **Environmental Refugees?**

It's easy to look at what happened in El Paso, what happened to Smelertown, as a sad event happening to a handful of people in a place that's separate from where you or I rest our head.

It's also easy to twist Smelertown into the story that we tell about places like Detroit and much of the American rustbelt, whose rise and fall was inextricably linked with that of the industry upon which they were dependent – steel, automobile, manufacturing. But unlike those towns, towns like Pittsburg, Pennsylvania, Cleveland, Ohio, and Buffalo, New York, whose fates were dependent on mercurial market preferences - shifts to overseas production, mechanization - Smelertown's eponymous smelter outlasted the town.



In 2013, I interviewed the residents of Belle Rose, a Southern Louisiana town in the heart of Cajun country on the edge of Bayou Corne. Don't bother Googling for it – the town, like Smelertown, no longer exists. In Belle Rose, unlike in Smelertown, the culprit wasn't lead, but rather salt. There are three main ways to collect salt. You can drag salt water from the sea and let the sun evaporate the water leaving behind the salt. You can dig deep shafts and hammer out salt in much the same way we mine for other minerals. Or, you can find a massive underground salt dome, drill a hole in the top, inject it with water to dissolve the salt, and then pump the salt solution, or brine, back to the surface. Once on land you might evaporate it later, or sell it as is: salt brine is useful in the plastics industry that also dots this corner of Southern Louisiana. Belle Rose was located about a mile away from a mine operated by the Texas Brine Company, which as its name suggests was a salt brine mine. Unfortunately, Texas Brine removed so much salt that they ruined the structural integrity of the underground dome. The dome collapsed August 3, 2012. The area's marshy wetland became a 526 foot wide and growing lake.

As the dome collapsed, it also released significant pockets of naturally occurring methane gas. Between the risk of explosion from the natural gas and the risk of being swallowed alive by the sinkhole, most residents accepted a buyout and left behind the spicy streets of Sauce Picante Lane, and Jambalaya Way. The half dozen or so residents of Belle Rose that I spoke to were shocked, *shocked*, that an industrial accident could occur in their community. That it could destroy their community.

Roughly two miles from Belle Rose, on the other side of the Bayou Corne sinkhole, a brief drive down Louisiana 70, rests the concrete slab foundations of the homes that once comprised the community of Grand Bayou. On Christmas Day 2003, in an access well to an underground gas storage cavern owned by the Dow Chemical Co., a metal casing failed. The cavern, like the salt one owned by the Texas Brine Co, was carved from the Napoleonville Dome. Dow, like Texas Brine would do in Belle Rose, bought the residents out. And yet, despite an environmental catastrophe happening so close to their community, the Belle Rose residents still did not believe that it could happen to them.

In 2001 the *BMJ* decided to ban the word accident from use in their journal. In a statement the editors wrote, "For many years safety officials and public health authorities have discouraged use of the word "accident" when it refers to injuries or the events that produce them. An accident is often understood to be unpredictable—a chance occurrence or an "act of God"—and therefore unavoidable. However, most injuries and their precipitating events are predictable and preventable. That is why the *BMJ* has decided to ban the word accident."

And yet, words like catastrophe and disaster carry the same air of inevitability as accident. But what befell Smelertown, and Grand Bayou, and Belle Rose was not inevitable. The ore that was transformed in ASARCO's smelters were turned into products - knives, paint, and coins - manufactured for our consumption. Similarly the salt brine in Texas Brine was headed to petroleum factories where they'd turn oil into plastic wrap, disposable

bottles, and so on. It was the result of the sum total of human choices, their impact on the environment that turned Smelertown into a desiccated parcel of vacant land, that turned land into water, that turned homes into slabs. In much the same ways that people forced to leave their lands due to war are refugees, wouldn't the Esmeliantos also be refugees, albeit of our consumption? Wouldn't the Esmeliantos, the residents of Grand Bayou, Belle Rose, and the numerous communities across the nation count as environmental refugees?

Kathleen Tierney, at the University of Colorado, Boulder calls this "disaster by design" in recognition that a disaster is when a hazard meets a human population. A tornado in an area where nobody lives is just weather. But putting the poorest people on a peninsula in the ocean in a hurricane zone – as New York City did with its public housing that was decimated during Hurricane Sandy -- is just asking for trouble. "Our social fabric is implicated in the causes of current and future disasters growing in inequality, poverty marginalization of minority groups and the poor," said Tierney who calls this disaster by design. "We're relegating those who are least able to cope to living in the most fragile kinds of structures."

This is an argument echoed by IDMC's Michelle Yonetani. "You may live in a flood basin and that may not be a problem for you at all, because the nature of your home, your living conditions, your livelihood, the way your community functions is completely adapted to the fact that maybe there are seasonal floods. So it floods, but it's not a disaster," said Yonetani. "Versus people who may be living in an area where their homes are not fit to withstand a flood... Maybe their entire home gets washed away and their livelihoods are dependent on being in that area. They don't have savings to back them up or alternative ways of making a living. That level of vulnerability plus the fact that you're exposed, and how well you're able to deal with it either yourself or with help from your country that combination creates disaster risk."

According to the Internal Displacement Monitoring Centre (IDMC), 26.4 million people per year have been displaced from their homes due to natural disasters since 2008. IDMC was created in 1998 with the explicit mission of tallying internal displacements – that is people forced to flee within their own countries – because no one else was doing it. The Interagency Standing Committee, the main mechanism for interagency coordination of humanitarian aid between the key United Nations agencies and international NGOs realized there was a huge gap in data analysis on people who are internally displaced.

"At the time it was focused on conflict. People displaced related to conflict and war.," said Michelle Yonetani, a Strategic Advisor with the Internal Displacement Project at the IDMC, "because often there's a lot of attention on refugees, but in some countries you see this huge disparity between assistance going to help refugees, but just across the border there were people in just as bad or worse situations but for one reason or another they were not getting assistance."

Underpinning the impacts of our direct environmental degradation is the harm we're poised to face due to arguably the biggest form of environmental degradation: human

caused climate change. In 2014, there were between 25 and 30 million environmental refugees a number that by some estimates are expected to swell to between 150 million to 200 million by 2050 mainly because of climate change. By the end of the century, according to the IDMC, rising sea levels and extreme weather could displace between 470 and 760 million people. We're facing a growing number of environmental refugees with no mechanisms in place to deal with them, and no policies to avoid the creation of more displaced people.

When we think of climate refugees, we usually think of rising sea levels, embodied in communities like North Carolina's Outer Banks, and residents of Virginia's Tangier Island. These coastal communities are finding that as the sea levels rise their communities are disappearing. Houses that once sat blocks from the sea are now beachfront property. We might also think of the community of Isle de Jean Charles which in January 2016 was given \$48 million dollars to move its entire community that is sinking underneath rising waters due to climate change.

But that's just one aspect of climate change, warns Benjamin Preston, a senior research scientist in Oakridge National Laboratories Environmental Sciences Division and the Climate Change Science Institute. Preston's research focuses on two things - trying to understand the risks and social vulnerability associated with climate change, and understanding the mechanisms that enable people and or communities to pursue adaptation in ways that are effective.

Preston notes that we tend to think of vulnerability in terms of "an exposure perspective where you have the most people coming into direct contact of sea level rise, or some kind of extreme weather event." And in that regard the attention paid to the population dense, hurricane prone, coastal areas that stretch from Texas to Maine makes sense. But notes Preston the environmental devastation associated with climate change won't just be limited to coastal areas. Preston points out, "Now if you were to switch and say we're concerned about extreme heat events, then you might look to say, the nation's interior in particular in places like Chicago places with high temperature, high temperature variability, also places with urban environments heat island effect that exacerbates heat waves and extremes. Midwest down into the deep south, also have high humidity."

Preston, who defines vulnerability as the potential exposure to harm, is also quick to point out that there's a third way of looking at environmental vulnerability. "When we're talking about the geography of vulnerability," said Preston, "we need to be aware of the people poised to be most adversely affected by climate change. And that tends to be places with large amounts of social disadvantage and social inequity and poverty

Right now, we can see that at play in places like Syria.

"When people look at the refugees in Syria they don't see an environmental root," said Jennifer Morgan, Global Director of the Climate Program at the World Resources

Institute, "Yet there's a connection between environmental degradation due to climate change and the refugee crisis we're seeing unfolding."

Gemenne, with Science Po in Paris, agreed and said, "There is clearly a connection between political crisis and environmental crisis. We shouldn't say that environmental destruction caused political destruction, but we also shouldn't ignore that link."

He goes on to note, "The French Revolution was initially triggered by famine in the countryside. The people first and foremost wanted food, and then they wanted liberties but this only came later. First they wanted food."

Closer to home we can see climate refugees in the Texas communities of Robert Lee, (pop. 1,100), and Spicewood Beach, (pop. 2000) that have simply run out of water due to droughts exacerbated by climate change. These communities lack the financial capacity to invest in costly technologies necessary to subvert the ecological constraints of their communities. Their departure is often less abrupt, but no less devastating than their coastal dwelling brethren. In 1925 TS Elliot, writing about the destruction of Europe after World War I, wrote in his poem *The Hollow Men* that, "This is the way the world ends/ Not with a bang but a whimper." The same could be said for the quiet erasure of American towns.

It's easy to think that these issues can't happen to us, in the places we call home, because maybe you don't live near a polluting industry, or maybe you don't live on the coast, or maybe your town has plenty of water. Or maybe you just think that this can't happen to you – that not just your home but your entire community can be ripped away – because our cultural capacity for denial is strong. And yet, it can happen, and when it does the impacts can be devastating.

"When you are displaced out of your community, your home, you are more vulnerable, more likely perhaps to experience different forms of discrimination," said Yonetani. The discrimination could be based on prejudices that existed before the disaster, or the disaster itself can cause biases. "It may be those things that are just exacerbated or exaggerated by the fact that now your normal forms of protection and security, whether that's people or networks and acceptance from the community, is now gone."

"When disaster research started in the late 1940s, there was a lot of emphasis on how disasters increased social cohesion, community morale, and caused people to work together who may not work together during normal non-disaster times," said University of Colorado's Tierney. "It painted a very positive picture of disasters, and that part is definitely true, but that doesn't mean that conflict doesn't exist alongside with social cohesion - often it does," notes Tierney. "If you look at New Orleans after Katrina there was a lot of conflict over the direction in which recovery should go. You saw some neighborhoods in New Orleans banded together to make sure that they kept temporary housing out of their neighborhoods."

Safety in numbers is partly why Esmeltianos pushed against being removed from Smelertown – the community provided a buffer from discrimination they'd already experienced. Evacuation threatened to destroy those bonds. It's also why Yonetani said, "Integration is a long term process. It's not just a quick fix, and it's about more than getting a roof over your head."

It's not just that being alive is risky – it's always been risky. It's that climate change in particular, and environmental degradation in general shifts that risk landscape, often in unpredictable ways, and in ways that can decimate communities. So, for example, if you live in a Californian community that is prone to earthquakes, but the homes are built to a strict earthquake code, the community has an earthquake emergency plan, and you routinely practice earthquake drills, the risk for harm, or the vulnerability of that community is relatively low.

Under climate change, these kinds of disasters are poised to increase; they're already increasing. And the people positioned to suffer the most are those who are already suffering: people in communities with lots of social inequity, poverty, lack of education, in places that are already straining under the impacts of extreme heat, drought, and flooding. The net result is going to be migration: people are going to leave. But more people are going to be angling to live in fewer and fewer places that are fit for humans. And humans have shown that as a species we're not very good at sharing. The effects of this jockeying for survival begs the question: Where will the people go?

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