

Race, Waste, and Space: Brownfield Redevelopment and Environmental Justice at the Hunters Point Shipyard

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Abstract: This paper advances the concept of “waste formations” as a way of thinking together processes of race, space, and waste in brownfield redevelopment projects. Defined as formerly industrial and contaminated properties, in the 1990s brownfields emerged as the grounds for new forms of urbanization and an emerging environmental remediation industry. Through their redevelopment, the twentieth century’s urban wastelands—environmentally degraded, economically divested, and often racially marked—have become sites of investment, resignification, and value formation. The concept of waste formations provides a critical framework on the ways these socio-ecological transformations rework twentieth century urban inequalities—in particular, the articulation of waste and toxic waste—and the ways they produce new geographies of environmental injustice through the displacement of toxic waste to newly waste-able spaces. This paper develops an analytic of waste formations and applies it to the process of brownfield redevelopment at the Hunters Point Shipyard in southeast San Francisco.

Keywords: brownfields, urban redevelopment, waste, race, environmental justice

Introduction

The view from Hunters View is at once spectacular and terrifying. Perched atop a steep hillside in the southeast corner of San Francisco, the public housing project looks out across the San Francisco Bay to the port of Oakland and the verdant East Bay hills beyond. Closer to home, and down the steep embankment onto the flats by the water, sits the Hunters Point Naval Shipyard. Abandoned by the US Navy in 1974, the shipyard is known as a highly toxic place, housing hazardous waste accumulated through a century of industrial shipbuilding and repair, as well as the discarded end products of a radiological laboratory that operated on the base for 20 years. The Navy has been trying to address the shipyard’s wasted nature since the early 1990s, and the project has become the most expensive naval-led brownfield remediation project in the country. It lays the grounds for a private urban development project that includes over 10,000 housing units, commercial spaces, and a climate change think tank center—all key components of the city’s attempts to revitalize its southern waterfront.

From the bird’s eye view of city planners and the speculative valuation of corporate investors, the Hunters Point Shipyard is the new frontier of development in San Francisco. For William Jones,¹ who lives in Hunters View and has for decades

watched over the old naval base, including the recent, slow process of brownfield remediation, the shipyard is a site of violence and sometimes death. “The naval workers didn’t know what they were being exposed to,” he told me one day, “and the radiological lab, it left thirty years before the cancers”. William, like many residents of Hunters View and the broader Bayview-Hunters Point neighborhood, which surrounds the old military base, is the child of African-Americans who left the South during World War II for shipyard jobs and a better life in the West. In the 1990s, he joined protests against environmental racism in Bayview-Hunters Point, where a history of intensive industrialization and racial segregation has produced high rates asthma, emphysema, and cancers for some of the city’s most vulnerable residents (BARHII 2008; Bayview-Hunters Point Mothers Environmental Health and Justice Committee et al 2004). William continued, “Today’s remediation workers,² they don’t have enough protection, they also don’t know what they are being exposed to, and the city health department and the construction company, they just don’t tell them.” What William described to me was an experience of being left to waste: exposed to the material forms of waste—without sufficient knowledge of or protection from its dangers—and left, more broadly, or neglected, by the state in ways that have manifested in the wasting of human lives through health problems and premature death.³

Following other scholars who have theorized “waste” as an imaginative resource⁴ and political critique (Gidwani 2008; Gidwani and Reddy 2011; Gille 2007; Gregson and Crang 2010; Moore 2009, 2012; Scanlan 2004), in this paper I suggest waste offers a critical lens on contemporary urban socio-ecological transformations (Heynen, Kaika and Swyngedouw 2006). In particular, emphasizing the social relations of waste and wasting challenges simple narratives of progress through which the reintegration of formerly industrial lands into commercial and residential real estate markets—such as the Hunters Point Shipyard project—take place. The redevelopment of brownfields—which are defined as formerly industrial sites in which contamination prevents or limits future development—emerged in the 1990s as a widespread urban economic growth strategy and is usually narrated as a process of urban revitalization and ecological restoration (Bjelland 2004; De Sousa 2008; Hula and Bromley-Trujillo 2010).

Brownfield redevelopment as an generalized urban strategy signals a new historical conjuncture, in which the twentieth century’s industrial wastelands—environmentally degraded, economically divested, and often racially marked—have emerged as sites of investment, resignification, and value formation. Estimates for brownfield sites nationwide range between 450,000 and 1 million (Environmental Protection Agency 2012; Herberle and Wernstedt 2006). Today, the federal Environmental Protection Agency (EPA) Brownfields Revolving Loan Fund Grants, Brownfields Job Training Grants, the Small Business Liability Relief and Brownfields Act, and the EPA document, “Anatomy of a Brownfield Redevelopment” aimed at clarifying the process “from a real estate perspective”, are all attempts to stimulate largely private reinvestment and redevelopment—significantly, along commercial and residential lines—into these formerly industrial lands. A 2004 report by the Bayview Hunters Point Mothers Environmental Health and Justice Committee documented over one hundred brownfield sites in the neighborhood, including the

shipyard (see Bayview-Hunters Point Mothers Environmental Health and Justice Committee et al 2004). Lennar Inc, the developer of the Hunters Point Shipyard and the third-largest homebuilder in the USA, now specializes in urban military base conversions, or the reintegration into urban real estate markets of some of the most contaminated brownfields in the country. In other words, Lennar's stockholders have recognized the value these wasted spaces as potential sites of capital accumulation.

As cities like San Francisco seek to reuse formerly industrial lands, it is important to have a critical framework on the ways these socio-ecological transformations rework older, longstanding inequalities. This paper argues that refocusing on the relations of waste foregrounds how brownfield redevelopment, rather than representing a clean break with an industrial past, often reproduces the social relations of an older, industrial economy—particularly those related to racial and health injustices. In showing how brownfield redevelopment projects often reproduce and renew articulations of race and toxic waste, even in a moment of ostensible “clean up”, this paper contributes emerging scholarship on geographies of waste (Moore 2012) by bringing this literature in conversation with a framework of environmental justice.

In what follows I elaborate on the significance of waste as an analytical category and advance the concept of “waste formations” as a way of thinking together the material and social relations of waste and wasting. I then expand on the relevance of this concept to understanding socio-ecological changes in Bayview-Hunters Point today through two empirical examples, and offer some concluding thoughts on how the concept of waste formations contributes to understanding emerging environmental justice problems of the twenty-first century.

Waste Formations

Waste is generally conceived of as a residual object or category. Waste is the by-product of production, the remainder from what is useful; the opposite of value. Rubbish, garbage, dirt, contamination—all are words associated with waste and which point to a state of being outside, separate from, and sometimes threatening to the social world. Zygmunt Bauman begins his book, *Wasted Lives: Modernity and its Outcasts* (2004), with a short story by Italo Calvino about a fictive city that daily throws away all things old and redundant. Calvino's city residents maintain their social world filled with new and valuable objects, while a rubbish heap piles up outside the city's walls, “dominating it [the city] on every side, like a chain of mountains” (quoted in Bauman 2004:2). The constant removal of what gets categorized as “waste” maintains the elevated status of social life in Calvino's city, and yet those same waste removal practices also render that life unstable, threatened “on every side”. This allegory captures the ways in which waste, at least within capitalist societies, is a category formed always in relation to value. Moreover, it highlights the ways capital's constant “revolutions in value” are premised on the continuous removal of waste objects, and yet this removal is better understood as a displacement. Waste remains, though it may be confronted and lived by beings in different times and places.

From the perspective of environmental engineers involved in brownfield remediation at the Hunters Point Shipyard, waste is an object to be removed and a problem to be solved through waste management strategies, much as it was for the residents of Calvino's city. At monthly shipyard public restoration meetings I attend, the naval engineer flips through power point slides that enumerate truckloads of waste extracted and underground chemical plumes neutralized through impressive technological feats—all evidence of the Navy's progressive steps toward full ecological "restoration". Presented as a measurable object, the shipyard's waste appears removable and containable, and the Navy appears in control of maintaining these borders between contamination and social life. This technocratic approach to waste as a problem of proper management is shared by local environmental organizations which monitor the Navy's progress. While these environmental groups offer critical oversight of the Navy's work, their critiques revolve around the precision and rigor of the Navy's progress rather than its underlying modernist assumption in the ability to separate and remove waste objects from society.

An emerging scholarship has begun to explore the analytical potential of waste as a lens into contemporary social relations. For Gidwani and Reddy (2011), notions of waste at different historical moments foreground the exclusions and constitutive outsides of modernity and capitalism in colonial and post-Independence India—waste is the limit of civil society and the ever shifting frontier of surplus value production. In a review and synthesis of emerging scholarship on "geographies of waste", Sarah Moore (2012) suggests that waste, taken as an object of study, works as a "parallax object" (citing Zizek), "that which disturbs the smooth running of things" (Zizek 2006, in Moore 2012:2). In an earlier article (2009) she explores the politicization of garbage in Oaxaca, Mexico—as a political tool, garbage represents the excess of modernity and the inability of waste managers to completely dispose of the stuff (ie displacement rather than removal), as with the residents of Calvino's city. Tim Edensor (2005) likewise argues that industrial waste, through the materialities and temporalities of abandonment and decay, "speaks back" to a spatially and socially ordered world—the world of value. Importantly, Edensor and Moore both discuss waste as form of "excess", which is different than the typical notion of waste as discarded matter. The concept of excess foregrounds waste as active and threatening—it haunts the world of value, revealing the vulnerability of order and cleanliness, and the instability of borders around categories, objects, and selves. With Edensor, Gregson and Crang (2010) argue for more attention to waste as a material as well as a concept. They focus in particular on industrial waste (noting that most waste scholarship looks instead at household waste), and suggest that new waste scholarship can contribute to scholarly work on materiality through a more rigorous engagement with the material nature, or the "stuff" of waste, which has heretofore been left to the technical domain of engineers—much like the contractors working at the Hunters Point Shipyard.

With the exception of Gidwani (2008) and Gidwani and Reddy (2011), new waste scholarship has not yet engaged with histories and theories of race and racism(s). This is a considerable absence because, as Gidwani shows through his study of colonial and post-Independence India, concepts of "waste" have historically linked

uncultivated space (or perceived wastelands) with improper bodies and habits, justifying the dispossession and alienation of, for example, Indian peasants from the land in need of European management and improvement (Gidwani 2008). As Gidwani shows, seventeenth century notions of improvement, enacted through the enclosures of English common lands and in the European colonies, depended on the categorization of certain spaces as wasted, which was inseparable from the racialized bodies that lived in those perceived wastelands. Gidwani refers back to the political philosopher John Locke, for whom “improvement” entailed making nature productive through “proper” use—through enclosure and industrious cultivation which was, importantly, accomplished by particular racial subjects—specifically, by propertied, white Europeans (Gidwani and Reddy 2011; Mehta 1990).

As Locke’s strand of liberalism was applied through the Anglo conquest of North America, the categorization of lands as wild, or “natural” and, by implication, wasted, was not separable from the racialization of Native Americans who inhabited and tended those “wild” spaces. That which Anglo settlers categorized as unimproved wilderness was in fact a highly managed landscape, but was not recognized or valued as such (Anderson 2005). Not only did the moral imperative to “improve” wild and hence wasted lands justify the dispossession of Native Americans, it also depended on a prior categorization of that land as in need of not simply improvement but the *proper* improvement, implicating bodies and habits in the Anglo-European concept of “waste”.

The production of twentieth century urban wastelands, including land and bodies seeped with the by-products of twentieth century industrialization, is likewise inseparable from constitutive processes of race and racism. The articulation of race and toxic waste in particular has been explored by environmental justice scholars and activists (for selected examples, see Hurley 1995; Kuletz 1998; Pulido 2000). Yet the contributions of environmental justice scholars is absent from current dialogues, discussed above, on waste as an analytical category. New waste scholarship might better engage with critical race theory and with the historical and contemporary articulations of race and toxic waste, which are at the center of the politics of many brownfield redevelopment projects. At the same time, the environmental justice literature might benefit from the theoretical rigor of the new waste scholarship, as well as its emphasis on the materials and materiality of waste (cf Ingold 2007).

Bringing new waste literature together with a framework of environmental justice, I suggest the concept of “waste formations” as a way of thinking together processes of race, waste, and space in twenty-first century US cities. The concept of waste formations refers to Omi and Winant’s concept of “racial formations”,⁵ which they define as “the sociohistorical process by which racial categories are created, inhabited, transformed, and destroyed” (1994:55). “Waste formations” foregrounds the work of waste in racial formations, attentive to the ways that waste in particular has been a central modality through which race in twentieth century US cities has been lived. As I show below, race has historically been central to signifying the waste-ability of urban space. Moreover, the intimate proximity between environmental hazards and racialized bodies has resulted in the wasting of human life⁶ (cf Berlant 2007; Nixon 2011) and the reproduction of racial difference through premature death (cf Gilmore 2007).

The concept of waste formations also draws from Ann Laura Stoler's writing on "ruin and imperial formations" (2008), in which she challenges the concept of the "post-colonial" by foregrounding the persistence of imperial relations in and through the ruins and ruinations of empire. Stoler's focus on ruins as both a physical and social process emphasizes "the connective tissue that continues to bind human potentials to degraded environments, and degraded personhoods to the material refuse of imperial projects" (2008:193). In a similar vein, this paper's concept of waste formations attends to the articulation between the material stuff of waste and unequal social formations—the ways waste streams through bodies and, via trucks, to different spaces. The idea of waste formation thus argues against the notion of the "post-industrial" (cf Nixon 2011), by challenging the idea that brownfield redevelopment at the Hunters Point Shipyard represents a clean break with industrial contamination and environmental injustice through an ostensible process of restoration and repair. Instead, industrialization remains, as, for example, the abandoned underground fuel tanks leaking plumes of synthetic chemicals, or the "wageless life" (Denning 2010) produced through the locational shifts of industries and jobs—the human "waste" of global economic restructuring (cf Bauman 2004). Particularly for Bayview-Hunters Point residents suffering from today's cancers, the term "post-industrial" and "clean-up" are misnomers that obscure the multiple ways industrialization remains a persistent feature of daily life (cf Nixon 2011).

Two Trucks: The Warehouse and the Rubbish Heap

In 2011, the Brookings Institute named the Hunters Point Shipyard development project one of three "Transformative Investments in the United States". The award recognized the capacity for an urban development project to "leverage the distinct physical assets of cities and maximize their economic, fiscal, environmental and social potential" (Katz and Wagner 2008; *San Francisco Chronicle* 2011). The development project, while not yet built, has received other awards—the "Gold Nugget Grand Award" from the Pacific Coast Builders Conference, the "Hard Won Victory" award from the American Planning Association's California chapter, and was short-listed for the World Architecture Festival award in 2011. While at times acknowledging the collaborative work among residents, the city redevelopment agency, and Lennar Inc that has gone into the design of this development project, these awards also work to stimulate increased private investment. Indeed, the only structure built to date at the shipyard is a crisp steel, wood, and glass structure called the "community center", where, as one employee explained to me, Lennar takes its potential investors.

To drive along the Third Street, the commercial artery of Bayview-Hunters Point, is likewise to be confronted by a landscape of new private and public investment. New condominium complexes replace old warehouses and advertise competitive housing prices, while banners hang from street lamps telling passersby to "Shop in the Bayview", "Create in the Bayview", and "Grow in the Bayview". It is ambiguous whether these words are intended for new home buyers, perhaps resembling Richard Florida's "creative class"⁷, or meant to stem the tide of

African-Americans who are moving out of the city in significant numbers: between 1990 and 2005, the African-American population of San Francisco decreased by 27.8% (San Francisco Mayor's Task Force on African-American Out-Migration 2009). A promotional aluminum green water bottle for a new condominium complex on Third Street suggests the former—the side of the water bottle tells its drinker to “Buy in the Path of Progress”, and depicts a wave sweeping over a row of homes. Along Third Street, the British-owned Fresh and Easy supermarket, opened a few months ago, is the first supermarket in the area in decades, while high-end restaurants like Limon (Peruvian cuisine) and Radio-Africa (Ethiopian inspired) bring San Francisco's foodie culture to the thoroughfare.

The image of a wave of progress—overtaking the neighborhood, washing the old away—is a good way of describing the broader narrative of improvement and value creation that motivates planning and development practices in Bayview-Hunters Point today. In October 2011, I attended a ground-breaking event at a weedy public lot in the neighborhood where, with a group of other volunteers, I helped cut back the tall, coarse grass and lay mulch for a new community garden. At the event, a recent homeowner swung his weedwacker in the direction of an old smokestack a few blocks away, commenting that he would like to chop it down as well. His gesture symbolically severed the emerging present of new development, rising home values, and a whiter residential population from the neighborhood's industrial and racially marginalized past.

This dominant narrative of an inevitable tide of progress imagines a break with the neighborhood's industrial past, even as hazardous waste endures as a reality for many in the present. The forward moving wave also directs attention to the future of Bayview-Hunters Point and away from crucial questions of how the degraded terrain on which contemporary development is taking place was produced. As Zygmunt Bauman writes in *Wasted Lives* (2004:27):

The story we grow in and with has no interest in waste. According to that story it is the product that matters, not the waste. Two kinds of trucks leave factory yards daily—one kind of truck to proceed to the warehouses and department stores, the other to the rubbish tips. The story we have grown with has trained us to notes (count, value, care for) solely the first kind of truck.

To turn towards the processes of waste and wasting in Bayview-Hunters Point would include recognizing how contemporary forms of value creation, capital accumulation, and urban transformation have emerged and depend on a longer history of the racialization of Bayview-Hunters Point.

This history begins after the US annexed California in 1848, when noxious industries began relocating south of the growing metropolis of San Francisco. As the city emerged as the cosmopolitan and financial center of the West—through an influx of population and mining wealth from the Gold Rush—foul-smelling industries like meat-packing operations, glue factories, tanneries, ship-building companies, and iron foundries accumulated along the southeastern waterfront (Olmsted 1979). Although these industries ostensibly located away from “the public”, who lived in other areas of San Francisco, industrial workers lived among the factories—predominately Italian, Maltese, and other non-Anglo immigrant groups categorized as lesser “races” in this

historical moment (Jacobson 1998; Olmsted 1979). The city's first zoning map of 1921 codified this patchwork of residential and heavy industrial land use, reinforcing the area's industrial character and establishing the state-sanctioned conditions for the contemporary proximity of racialized bodies and industrial waste (San Francisco, City and County 1921).

In 1940, a wartime economy created "boomtowns" along the West Coast, as military industrialization redirected the Great Migration of African-Americans out of the US South from initial destinations in northern industrial cities to the West. From 1940, when the Navy acquired the shipyard, to the war's end in 1945, San Francisco's African-American population increased by almost 700% (Broussard 1993). While most settled in the Western Addition/Fillmore district, which became, as the poet Maya Angelou recalls, "San Francisco's Harlem" because of a racially exclusionary housing market, the only other area of the city open to these new migrants was Hunters Point. The Navy hastily built over 12,000 housing units near the shipyard to accommodate its wartime labor supply (Kelley and VerPlanck Historical Resources Consulting 2010). After the war these poorly constructed buildings became public housing units inhabited primarily by an African-American population in Hunters Point that swelled as city planners demolished the Western Addition, which some still refer to as "Negro removal" (Brahinsky 2011; Sumchai 2010). Across the country, racially discriminatory federal housing administration loans facilitated postwar "white flight" to the developing suburbs, drawing jobs, people, and a tax base away from older urban areas, which became economically impoverished and racially segregated (see Massey and Denton 1993). This process occurred in Bayview-Hunters Point: US census data record how the neighborhood's "white" population decreased by 59% in the 1960s, while African-Americans became the dominant racial group, at 69% of the population (San Francisco Planning Department 1970). This demographic shift occurred at the same time the shipyard was slowly shedding its jobs, eventually closing in 1974.

State-sanctioned processes of racial demarcation and devaluation also worked through popular media outlets, which drew firm lines between Bayview-Hunters Point and the rest of the city, reflecting and reinforcing real differences in income, opportunity, and skin color. A 1969 local TV series on Hunters Point titled, "Our Home, the Ghetto" told viewers it would take them "inside the black community ... here in Hunters Point" to investigate "a new culture of black brotherhood". As the TV reporter informs his viewers, "if you really want to know, you have to go down into their world, to meet them, talk about their problems, on their terms and in their language" (KPIX 1969). Reinforcing this representation of Bayview-Hunters Point as outside or different from mainstream "San Francisco", the *San Francisco Chronicle* ran a five-part series on Hunters Point in 1972, with the first article in the series titled "Inside Hunters Point" and the fifth article "Outside's Impact on Hunters Point". Both reports articulate a binary anthropologist Steven Gregory identifies as the trope of the "inner city" as the imagined outside of "mainstream America" (Gregory 1998). This differentiation of or demarcation of Bayview-Hunters Point from "San Francisco" was accomplished through the discursive separation of the neighborhood along racial lines. In its application for federal War on Poverty funds in 1968, San Francisco's planning department was

unambiguous in this regard, observing that, in the 1960s, “the area became more firmly identified as a low income Negro ghetto” (San Francisco, City and County 1968).

The ways Bayview-Hunters Point became racially demarcated is inseparable from its growing landscape of urban waste and wasting. As the neighborhood newspaper, *The Spokesman*, reported in 1965, “The street cleaning crews are so seldom seen in our neighborhood that one gets the impressions that they clean our streets in their spare time.” In later years the paper describes cockroaches and “rats as big as coke bottles” on the streets in the Alice Griffith public housing complex, adjacent to the Hunters Point Shipyard. Yet the intensive production of synthetic chemicals and nuclear waste in the second half of the twentieth century brought the meaning of “wasted space” into new realms. Industrial production has always required a space for waste disposal, a geography of the perceived “outsides” of value, available to waste. That Bayview-Hunters Point served this purpose for San Francisco during the twentieth century cannot be separated from the fact that it was also a neighborhood inhabited primarily by racial minorities. The link between race and waste-able urban space was made clear by 1968 city report which referred to Bayview-Hunters Point as San Francisco’s “dumping ground”. The report referred not to the shipyard’s toxic landfills, the auto-wrecking yards along the waterfront, particulates from the aging power plant, or any of the other heavy industrial operations in the area, but to the public housing residents who were, by that time, largely African-Americans (San Francisco, City and County 1968).

Simple narratives of improvement obscure the persistence of waste in the contemporary moment. In 1994, a group of mothers from Hunters View collaborated with a local environmental justice organization to survey the landscape of hazardous waste sites that had accumulated in Bayview-Hunters Point in the postwar decades. Their report documented over 100 brownfields, 187 leaking underground fuel tanks, and 124 companies that handle hazardous waste. In addition to a Superfund site at the Hunters Point Shipyard, five other locations within Bayview-Hunters Point have been evaluated as potential Superfund sites (Bayview-Hunters Point Mothers Environmental Health and Justice Committee et al 2004), a stark indicator of articulations of race, space, and industrial waste. Even today, as Bayview-Hunters Point is targeted for the largest redevelopment project in the city’s history, residents continue to describe the feeling of existing outside the city’s purview and the reach of its services. At a coffee shop on Third Street, one woman described to me a revealing conversation she had with a member of the city’s Parks and Recreation commission. After her pitch to build a new park in an area along the waterfront, just north of the shipyard, one of the commissioners thanked her but noted that the commission only funded parks *inside* of San Francisco—the area she lived in was outside of his mental map of the city. At a garden in Bayview-Hunters Point where I spend my Saturday mornings, residents have described to me how the garden lot, now overgrown with aloe plants and purple sage, once housed piles of urban waste, including shopping carts, broken bottles, car batteries and in one case, an entire car. They described to me the labor of making phone calls and filing forms to try and get the city to clean up these waste lots, often doing this work of garbage removal themselves. Stories of vacant lots used as waste dumps—the trash appearing in the

morning, having been dumped in the middle of the night—are common among people I talk to, recalling *The Spokesman's* complaints about the absence of the city's waste services in the mid-1960s. Areas of Bayview-Hunters Point have for decades quite literally been places where the city's rubbish heap piled up.

Through the redevelopment of formerly industrial lands, the historical temporalities of waste are inverted: lands wasted through intensive degradation and *over-use* are now resignified as “wasted” in the Lockean sense—as under-utilized, economically unproductive lands, requiring proper forms of twenty-first century cultivation and development. Bayview-Hunters Point's degraded urban environment no longer marks it as a place to relocate additional waste as it was for most of the twentieth century, but as under-developed urban land to capitalize on through new residential and commercial development. The categorization of large swaths of the neighborhood as “blighted” marks those spaces as economic wastelands, justifying particular forms of urban development, such as market-rate condominiums constructed by private development companies rather than, for example, affordable public housing. The massive amounts of waste materials removed from Bayview-Hunters Point today likewise cannot be understood apart from the resignification of the neighborhood by dominant interests as an economically and socially valuable space, a transformation that coincides with an influx of private investment in residential real estate, a decline in the neighborhood's African-American population, and an increase in white homeownership. The concept of “waste formations” works as a “connective tissue” (Stoler 2008) that analytically binds these processes together.

War's Remains

In 2008, the US Navy disbanded the Hunters Point Naval Shipyard Restoration Advisory Board (RAB), a forum set up for Bayview-Hunters Point residents to discuss and ostensibly advise the Navy on its restoration process. The RAB was co-led by a naval representative and an elected community member, and had met near-monthly for 15 years. Today's restoration events, renamed “Community Informational Meetings”, are, in contrast, power-point driven presentations that include a short public comment period at the end. Very few residents attend these meetings. Most people in the audience are environmental regulators from the EPA, the Water Resources Board, and the city's public health department, and staff support from a public relations firm the Navy hired to handle community outreach. During the public comment period at an informational meeting in February 2010, a resident pointed out that less than a third of those in attendance actually lived in the neighborhood, and called the event an “agency meeting”.

As part of the official letter of dissolution, the Navy explained that the RAB had become too political, that topics such as jobs for local residents and airborne toxic debris from the development company's construction work were outside the scope of the RAB's concerns. For the Navy, these social issues were separate from their specific, technical task of environmental remediation. In contrast, for most Bayview-Hunters Point residents who participated in the RAB meetings, restoration was both an ecological and a social process—the question of how many truckloads

of waste had been removed from the base was inseparable from the question of who was driving those trucks. Unemployment today in Bayview-Hunters Point is twice that of the city as a whole. Indeed the neighborhood has had the highest rates of unemployment in the city since the shipyard closed in 1974. Meanwhile, residents have continuously struggled to get the Navy to hire local residents or contract with local businesses. While the restoration project is estimated to eventually cost \$1.2 billion, most of it bypasses the Bayview-Hunters Point community much like the two broad freeways that have divided the neighborhood from the rest of San Francisco since they were built in the 1950s. As another woman responded to a naval representative's deferral on the question of jobs at a recent community meeting, "We got the bad air, but we don't have the jobs."

At its community meetings, the Navy's work of managing the material waste of war collides with another form of war's remains—an industrial surplus population. Through its narrow, technical approach to the shipyard's restoration, the Navy has been able to defer responsibility for the social effects of war-making (cf Lutz 2002). Maintaining a scientific approach to waste management, cleansed of its social and geographical relations, also allows the Navy to present its brownfield redevelopment project as a story of progress and improvement, a slow but inevitable environmental "clean-up", even in the context of a neighborhood still struggling with the social, economic, and health effects of war-making and de-mobilization.

The task of brownfield remediation for the Navy is indeed daunting. In addition to shipbuilding and repair, the shipyard also housed a radiological laboratory that operated on the base from 1946 to 1969. The Naval Radiological Defense Laboratory (NRDL) grew out of an enormous waste problem: what to do with hundreds of warships contaminated during the Operations Crossroads nuclear blasts at Bikini Atoll in the summer of 1946. Confronted with a fleet of radioactive vessels in the middle of the Pacific Ocean, the Navy looked to the Hunters Point Shipyard, the largest dry dock on the West Coast. In December 1946, it returned 79 ships to the San Francisco Bay for decontamination and disposal (US Navy 2004). The NRDL grew out of ad hoc experimentation in the effort to decontaminate the irradiated warships. Meanwhile, the Navy worked to dispose of other nuclear by-products—burning fuel oil contaminated with plutonium and mixed fission products in the shipyard's boilers and burying radioactive sandblast from scouring the vessels in its landfills (US Navy 2004). Throughout the 1940s and 1950s, the NRDL expanded its research into testing the biological effects of radiation exposure on tens of thousands of animals, developing radiation detection instruments, and conducting other basic and applied science research using fallout sent to the laboratory from the Pacific Proving Grounds, Nevada Test site and radioisotopes produced at Oak Ridge (Arc Ecology 2004; US Navy 2004).

The lab also generated its own waste products. Today, radionuclides exist throughout the storm drain lines and septic systems, in addition to the shipyard's landfills (US Nuclear Regulatory Commission 2012). Radium-226 is one of the more prevalent radionuclides, used in luminescent paint on naval ships until the 1970s. Today Ra-226-laced paint remains splattered on walls and floors throughout some of the shipyard's industrial buildings, as well as throughout its sewage system⁸ (K Forman, personal communication with

author August 2011). Animal body parts and other waste products from the lab were packed into 55-gallon drums and either transported to a small archipelago 27 miles off the coast of San Francisco, or dumped into the shipyard's landfills. While the NRDL conducted these and other experiments, the shipyard itself was slowing its operations, part of a national process of de-mobilization and the increasing privatization of ship-building (Durant 2007), eventually closing in 1974.

On a bus tour of the shipyard I attended in August 2011, a naval representative assured our small crowd that no one was at risk of toxic exposure, that layers of dirt separated and protected us from the waste underground. Here it is important to recognize that this waste was never separate from the bodies of the Navy's waste disposal workers, or those involved in manual and technical labor in the NRDL's experiments. Workers interviewed for the Navy's Historical Radiological Assessment (US Navy 2004) have testified to the lack of training and the messy conditions of the animal laboratory, where animals were injected with radionuclides or irradiated with x-rays. Waste disposal workers hosed down bloody cages, chopped up dead animals to package them in 55-gallon drums, and killed other animals that had not yet died in the experimental process (US Navy 2004). The Navy also found the lab's workers' exposure to radiation of value to an emerging field of nuclear science and concerns for national security. By maintaining clinical records on its personnel, the Navy hoped to establish maximum permissible exposure limits to alpha, beta, and gamma radiation, as well as to learn from situations of radiation over-exposure (US Navy 1949).

At today's restoration meetings, the Navy presents itself as an environmental steward and the remediation project as a story of ecological improvement. The contradictions of this narrative of ecological renewal is clearest on the 49-acre segment of land called Parcel E-2, which contains the shipyard's industrial landfills. Parcel E-2 is a Superfund site and the most contaminated part of the shipyard. The hazardous materials contained within its landfills are considered so toxic it is dangerous even to excavate enough of the soil for proper testing or to remove the landfills entirely, the solution many residents of Bayview-Hunters Point would prefer. Instead, the Navy's solution is to "cap" the landfills with a thick layer of industrial-grade plastic. For the parts of Parcel E-2 around the plastic landfill cap, the Navy promises a wetland habitat—although this is largely because the extent of its contamination prevents any form of human residential or commercial use. At a recent meeting, Sharon—a naval engineer—presented slides depicting the progress of E-2 from a contaminated and unkempt-looking space to a tidy shoreline, an image communicating ecological renewal, ostensibly "clean" or at least unthreatening beneath the surface as well. Sharon also emphasized the return of wildlife like coyotes and geese to the site as evidence of its ecological future. In fact, most of the land area of E-2 is the product of industrial fill, formed in the early 1940s as the Navy expanded the shipyard by cutting into neighboring hillsides and building out the shoreline into the San Francisco Bay. The proposed wetlands habitat at E-2 communicates a return to a more pristine "nature", yet it is better understood as a new, hybrid form of post-industrial nature (Braun and Castree 1998) emerging in and through the ruins of an industrial past.

As applied to the military's industrialization of San Francisco, the concept of waste formations recognizes the link between the social and physical remains of war—a critique which is at the heart of many residents' antagonism toward the Navy today. While the image of Parcel E-2 as a wildlife refuge represents a full restoration of the shipyard, the Navy continues to defer responsibility for job creation, or economic renewal, for Bayview-Hunters Point residents. As another naval representative explained at the same meeting as Sharon's presentation, the Navy actually has very few jobs to offer local residents, as most of the work of brownfield remediation is contracted out to private companies. He went on to further shield the Navy from possible social responsibilities by explaining that San Francisco's local hiring policy would not apply to the remediation project, which was only bound to federal regulations. A scientist from an environmental organization sided with the naval representative by commenting that the restoration meeting was about environmental clean-up, not jobs, to which a Bayview-Hunters Point resident responded that, with the release of \$1.2 billion, people have every right to ask about jobs. The extent to which this divide between technical and social restoration is maintained allows the Navy to represent its shipyard restoration project as a story of scientific and environmental progress, most strikingly captured in the image of Parcel E-2, rather than confront the demands from many Bayview-Hunters Point residents that the Navy take responsibility for the social effects of the militarization as well.

Conclusion

This paper began with William Jones's perspective on the Hunters Point Shipyard from his home in the 1950s era, barrack-style public housing units which are, like the shipyard, undergoing redevelopment. Political activists like Jones in Bayview-Hunters Point have campaigned for decades for the clean-up and redevelopment of both the Hunters View public housing units and the shipyard. Today both redevelopment projects are met with a similar sense of ambiguity—they symbolize hard fought political victories and yet are inseparable from broader, market-led transformations that are experienced by many in the neighborhood not as a wave of progress, but rather as a forceful tide of displacement.

Jones's view on the shipyard is one of the lived experience of multiple racial exclusions which have articulated in substantial ways with the processes of physical waste—with car batteries rotting on weedy public lots and toxic particulate matter gushing from a power plant that operated adjacent to the shipyard from 1928 until a protracted environmental justice campaign shut it down in 2008—as well the sensation of bodily wasting. "Once you come here", as said to me over the phone one day, referring to Hunters View, "you can smell and taste the pollution". The concept of "waste formations" attempts to bind analytically together these socio-ecological relations which are, for Jones and many others, already experienced together as part of daily life.

The concept of "waste formations" also brings an environmental justice framework together with new waste scholarship to bear on emerging socio-ecological problems. At community informational meetings on Parcel E-2, many residents are

adamant that all of the toxic soil in the shipyard's landfills must be removed. "Dig it all up", said one woman at a recent meeting, who has lived uphill from E-2 for 40 years, "if your pocket book comes up short, well our pocket books have been coming up short for years". For many residents the complete removal of E-2 soil would symbolize environmental justice—something experienced, as the woman at the community meeting expressed, also as a form of economic redistribution. Wealth, as her comment implied, should be used for cleaning up the shipyard rather than going to a company's shareholders.

And yet digging up E-2 would also mean another kind of redistribution—that of an even greater amount of contaminated soil from the shipyard to a low-level nuclear waste facility in the desert lands of Tooele County, Utah, near the Skull Valley Goshute reservation. The Skull Valley Goshute tribe already lives with the effects of the Dugway Proving Grounds, the Tooele County Army Depot (the site of the world's largest nerve gas incinerators) and MagCorp—a magnesium production plant which emits chlorine gas (Jeffries 2007). Even without the removal/displacement of E-2, thousands of truckloads of soil from the shipyard have, in the past few years, been deposited in Tooele County. In short, brownfield redevelopment—now a generalized urban strategy—represents a new challenge for the environmental justice movement, in terms of thinking through what justice might mean in such circumstances where the toxic by-products of twentieth century industrialization must ultimately be confronted and lived with by humans and other creatures at some time and place. Here, the concept of waste formations attempts to bring emerging theoretical approaches on waste together with ideas of environmental justice in a way that recognizes these new socio-ecological problems of the twenty-first century.

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Endnotes

- ¹ All names have been changed.
- ² Remediation workers from the Bayview-Hunters Point community have been enrolled through an EPA Superfund job-creation program for economically depressed neighborhoods.
- ³ Ruth Wilson Gilmore writes, in *Golden Gulag: Prisons, Surplus, Crisis, and Opposition in Globalizing California*, "racism is the state-sanctioned and/or extralegal production of group-differentiated vulnerability to premature death" (2007:247).
- ⁴ Donna Haraway refers to the image "cyborg" as an "imaginative resource". As an admixture of nature and culture, it also represents a political position of "permanent partiality". "The cyborg", she writes, "is our ontology, it gives us our politics" (1991). Inspired by Haraway, this article explores waste as an analytical and political resource.

- ⁵ I would like to thank one of the peer reviewers of this article for suggesting this important connection.
- ⁶ Today, many forms of pollution and social stress contribute to the area's high rates of hypertension, emphysema, asthma, and cancer—what Lauren Berlant calls “the physical wearing out of the population” (Berlant 2007), or the wasting of human lives.
- ⁷ Florida's thesis is that the creative class drives urban economic growth today. His “super-creative core” includes scientists and engineers, university professors, poets and novelists, artists, entertainers, actors, designers, architects, and writers “(Florida 2002), as well as “creative professionals” who worked in knowledge-intensive industries like high-tech (Florida 2002). A climate change think tank center, billed as a new center of “greentech” is slated for construction on the Hunters Point Shipyard.
- ⁸ Radium paint illuminated military equipment in the dark. Although it was banned by the EPA in the 1970s, by the 1920s medical researchers had already drawn connections between radium paint and cancer (Welsome 1999).

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