

**Wasteways:
Regimes and Resistance on the Path to Sustainable Urban Infrastructure**

By
Lily Baum Pollans

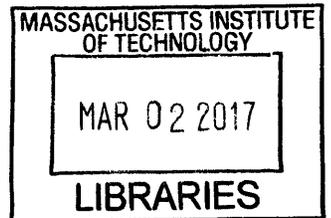
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Master in City Planning, MIT, 2005

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Lily Baum Pollans
Signature redacted

Signature of Author:.....

.....
Department of Urban Studies and Planning
February 2, 2017

Eran Ben-Joseph
Signature redacted

Certified by:.....

.....
Eran Ben-Joseph
Professor and Head of Department
Thesis Supervisor

Lawrence J. Vale
Signature redacted

Accepted by:.....

.....
Lawrence J. Vale
Chair, PhD Program in Urban Studies and Planning

ABSTRACT

For many people, recycling is a habitual environmental action. In recent years, however, critics have shown that municipal recycling programs are not always environmentally beneficial. Municipal waste management programs are, nevertheless, a key lever through which cities can influence material consumption, which is a driver of ecological overshoot and greenhouse gas emissions. Through transformation of municipal waste management, including and beyond the adoption of expanded recycling programs, cities can potentially reduce their environmental footprints. In the U.S., some cities seem to have been able to do this, and while most have not. This dissertation asks why.

Specifically, I ask if Seattle, a city known for its progressive waste programming, is substantially different from Boston, a city with relatively average waste and recycling programs—beyond the superficial metric of diversion rate. If so, how? Further, what enabled Seattle to fundamentally change its complex, socio-technical waste system? I find that the cities do differ meaningfully. Seattle's high diversion rate is a signal of deeper institutional changes to its waste system that position the city in opposition to dominant regimes of waste generation and management in the U.S. To compare the two cities, I use a combination of grounded theory and process tracing techniques to analyze archival data, interviews with system actors, and local press from 1980 to 2016.

Building on Zsuzsa's Gille's theory of waste regimes, I argue that the U.S. is dominated by a "weak recycling waste regime" that prioritizes hygiene, sanitation, and efficiency, while allowing limited post-consumer recycling of a few materials—paper, glass, metal, and plastic—regardless of the environmental efficacy of doing so. This regime is a product of the sanitary engineering discipline, the demands of a consumption-driven capitalist economy, and the influence of manufacturers seeking to avoid more invasive environmental regulation; it depends on rapid disposal and relatively invisible garbage. Boston operates well within the parameters of this regime. Seattle, on the other hand, has fundamentally reoriented its waste system towards goals of waste reduction and resource stewardship.

Seattle and Boston's waste systems differ in many ways, but the key difference lies not in organizational or infrastructural distinction, but in how each city responded to a disposal crisis in the early 1980s.

Seattle's crisis led to a wide open public dialogue about garbage, through which the problem of waste in the city was redefined. Traditional problem frames of sanitation and disposal gave way to new problem frames about the value of the materials in the waste stream and the environmental costs of squandering them through incineration or burial in a landfill. The inclusive, public redefinition process led to a new set of institutions for governing waste, from legislated waste reduction goals, to autonomy for programmatic experimentation, to—slowly over time—new roles for citizens and state. Instead of being locked in a service-provider-client relationship, Seattle's waste programs treat residents as partners in a project of resource stewardship, and cast the city government as both a responsible consumer and a programmatic innovator. Through this process, Seattle has achieved a remarkable recycling rate, but more importantly, has instituted curbside food scrap composting, nudged residents towards deeper engagement with their discards, and experimented successfully with restricting the use of toxic and hard-to-recycle materials.

In Boston, on the other hand, from the moment of crisis through 2016, the city's waste managers retained traditional views of garbage and the project of waste management. Limited planning and limited input have served to maintain focus on conventional concerns about cleanliness, sanitation, and efficient disposal. As predicted by the waste regime, the city has a minimal recycling program that conforms to industry standards.

I conceptualize the key differences between Seattle and Boston through a framework of wasteways. The term is borrowed from sewer engineering and redefined to provide a framework for understanding how unique municipal waste systems relate to dominant waste regimes. The transformation that took place in Seattle during the 1980s gave rise to an *alternative wasteway*—a system that is institutionally organized to resist the waste regime. Within Boston's *mainstream wasteway*, on the other hand, the city's waste system has operated, from the disposal crisis moving forward, as we would expect given the dominant regime.

Analyzing municipal wasteways—a framework that can be applied to any city in any context, and could be expanded to include other urban systems—draws attention to the institutional changes that support infrastructural change. Recycling alone may not be sufficient to achieve sustainable materials practice, but the underlying institutional evolution in Seattle suggests that cities can achieve bold—even radical—changes to material practices at the urban scale.

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CHAPTER 1

Overcoming the Era of Effluence: Garbage, infrastructure and sustainability in the American Urban Context

Consumption and waste in cities

Despite major improvements in conservation and technological efficiency, the world has seen rising levels of consumption and material flows since World War II. In fact, according to the EPA, in the past 50 years humans have consumed more resources—wood, minerals, fuels, chemicals, agricultural plants and animals, soil, and rock—than in the previous history of the world.¹ The United States, with less than 5 percent of the world’s population, was responsible for about one-third of the world’s total material consumption between 1970 and 1995. In light of the widespread impact to natural systems from these levels of human consumption, many have termed the post-World-War-II era the Anthropocene.² Others, making the case that voluminous and increasingly toxic wastes in gaseous, liquid, and solid forms are the most significant human creation, instead refer to the same period as the “Era of Effluence.”³

The exponential rise in resource consumption, and its attendant environmental pressures, has gone hand in hand with urbanization. As societies continue to urbanize, the bulk of the world’s population now depends on networks of resources and waste sinks beyond their immediate surroundings. Ecologists, ecological economists, and sustainability scholars have long warned that the degree of resource consumption and waste generation far exceeds the capacity of earth’s

¹ EPA, “Advancing Sustainable Materials Management: Facts and Figures 2013” (US Environmental Protection Agency, June 2015), https://www.epa.gov/sites/production/files/2015-09/documents/2013_advncng_smm_rpt.pdf.

² Paul J. Crutzen and Eugene J. Stoermer, “The ‘Anthropocene,’” *Global Change Newsletter*, May 2000; Will Steffen, Paul J. Crutzen, and John R. McNeill, “The Anthropocene: Are Humans Now Overwhelming the Great Forces of Nature,” *AMBIO: A Journal of the Human Environment* 36, no. 8 (December 1, 2007): 614–21, doi:10.1579/0044-7447(2007)36[614:TAAHNO]2.0.CO;2; Noel Castree, “The Anthropocene and Geography I: The Back Story,” *Geography Compass* 8, no. 7 (July 2014): 436–49, doi:10.1111/gec3.12141.

³ William E. Small, *Third Pollution: The National Problem of Solid Waste Disposal* (New York: Praeger Publishers, 1971).

biological systems. Widespread destruction of terrestrial habitats, damage to marine ecosystems, desertification, mass extinctions, and global climate change driven by greenhouse gas emissions are all results of this “ecological overshoot.”⁴

Infrastructure as the city

In its physical form, infrastructure it is a collection of material and technological artifacts—pipes, wires, roadbeds, telephone poles, treatment plants, satellite arrays, refineries, landfills—that form “the subordinate parts” of the great urban undertaking.⁵ The subordinate status of infrastructure, both conceptually and often physically too, renders it “part of the background for other kinds of work,” but also makes it inescapably political.⁶

Throughout the history of human settlements, infrastructure from roadways to radio towers have structured development, established state power, and both symbolized and imposed particular social orders.⁷ During the industrial city era, infrastructure was cast by city builders as the key to urbanization and capitalist growth.⁸

⁴ Donella H. Meadows et al., *The Limits to Growth* (New York: Signet, 1972); William E. Rees, “Cities as Dissipative Structures: Global Change and the Vulnerability of Urban Civilization,” in *Sustainability Science*, ed. Michael P. Weinstein and R. Eugene Turner (New York: Springer, 2012), 247–73, doi:10.1007/978-1-4614-3188-6_12.

⁵ The Oxford English Dictionary defines infrastructure as: “A collective term for the subordinate parts of an undertaking; substructure, foundation.”

⁶ Susan Leigh Star, “Ethnography of Infrastructure,” *The American Behavioral Scientist* 43, no. 3 (December 1999): 377–91.

⁷ James C. Scott, *Seeing like a State: How Certain Schemes to Improve the Human Condition Have Failed*, Yale Agrarian Studies (New Haven: Yale University Press, 1998); Matthew Gandy, *Concrete and Clay: Reworking Nature in New York City*, Urban and Industrial Environments (Cambridge, Mass: MIT Press, 2002); Jo Guldi, *Roads to Power: Britain Invents the Infrastructure State* (Cambridge, Mass: Harvard University Press, 2012).

⁸ Carl Smith, *The Plan of Chicago: Daniel Burnham and the Remaking of the American City* (Chicago and London: University of California Press, 2006).

Infrastructure can be deployed by states to rationalize space and social relations.⁹ Therefore physical networks that constitute urban spaces tend to embody stories about “distributional justice and planning power.”¹⁰ In the wake of neo-liberal privatization schemes, uneven infrastructure investment has produced and reproduced landscapes of unequal access to services.¹¹ In the age of escalating climate instability and reconfigured landscapes of risk, urban infrastructures like sea walls are replacing previous generations’ water and sewer systems as agents of displacement, protection, and the production of space,¹² and continue to produce and enforce uneven landscapes of risk. Investments in infrastructure mitigate risks for some, while increasing them for others.

A globalized economy and networks of international trade make flows of resources and waste possible in the abstract. Infrastructure makes them possible materially. Road, rail, air, and shipping networks allow for the transport of goods and food from distant sites of extraction and production to urbanized sites of consumption and the transport of solid wastes to sites of disposal. Water and sewer networks supply clean water and collect, clean and pipe away dirty water, protecting urban populations protecting urban populations from disease. The systems we’ve built to supply, inform, protect, and keep clean our cities also work to obscure the patterns of consumption and resource exploitation that are the underlying cause of climate change and so many other environmental calamities.

⁹ Scott, *Seeing like a State*.

¹⁰ Star, “Ethnography of Infrastructure,” 379.

¹¹ Stephen Graham and Simon Marvin, *Splintering Urbanism: Networked Infrastructures, Technological Mobilities and the Urban Condition* (New York and London: Routledge, 2001).

¹² Mike Hodson and Simon Marvin, *World Cities and Climate Change: Producing Urban Ecological Security* (New York: Open University Press, 2010); Simin Davoudi, “Climate Change, Securitisation of Nature, and Resilient Urbanism,” *Environment and Planning C: Government and Policy* 32, no. 2 (April 1, 2014): 360–75.

As human-induced climate change presents what scientists tell us is a truly existential threat to millions of species, including potentially our own, and given the role of infrastructure as the substrate on which urban life depends, the question looms large: can infrastructure serve other ends? Given its role as a tool of the state and the private sector, and frequently as an instrument of dominance, is it necessarily a tool for inequality and ever-increasing consumption? Can infrastructural systems built by and for powerful actors and institutions in order to support particular patterns of consumption and waste generation change? And, if so, can urban-scale infrastructural systems impact the global systems of resource flows and trade that underpin our current environmental predicament?

Work addressing similar questions abounds in the fields of clean energy and transportation, which are oriented around concerns of greenhouse gas emissions. Much less has been done within the discipline of planning to investigate other forms of resource consumption, and other forms of waste. This project is step towards expanding the discourse of planning to include other material flows in and around cities: specifically, garbage.

Municipal Solid Waste

Unlike greenhouse gasses which may be emitted anywhere and instantly dissolve into the atmosphere, mingling with billions of other exhalations from billions of other sources, garbage does not so elegantly evaporate when we toss it in the bin. Municipal waste systems thus provide a good medium for understanding the ways that cities engage with resources and wastes. Garbage, unlike greenhouse gas, is visible, traceable, and material. The systems to manage garbage engage every single city resident in the most public and most intimate aspects of their lives. We generate garbage everywhere, all the time though actions so naturalized we hardly notice them.

Municipal waste systems are stacked on top of other infrastructural systems—road, rail, communication, and water networks, to name a few—but also have their own independent technologies and facilities at multiple scales, from the discrete bin under a kitchen sink to a massive landfill that might be hundreds of miles away. This characteristic allows us to see how infrastructures are interconnected; how networks support networks, how path dependence is knitted and reinforced through multiple systems.

Garbage is both the product of individual behaviors—buying water in a disposable bottle, for instance—and surrounding infrastructures. If there is no water fountain, or if the water fountain provides water tainted with lead, we may have no alternative to bottled water.¹³ The study of municipal waste thus also allows for the exploration of the balance between infrastructure and individual; between system and actor.

Because of these unique characteristics, understanding the institutional and physical infrastructures of garbage management offers important lessons for urban sustainability. By observing where meaningful change in municipal waste systems occurs and what it looks like, we can glean useful insights for how socio-technical systems generally can resist the pull of capitalist logics organized around perpetual growth, exploitation, and other powerful interests. These insights can also provide clues about the role that municipalities can play in addressing their critical position as consumers of the bulk of the world's resources and the producers of a generous portion of society's wastes.

¹³ Max Liboiron, "Against Awareness, For Scale: Garbage Is Infrastructure, Not Behavior," *Discard Studies*, January 23, 2014, <https://discardstudies.com/2014/01/23/against-awareness-for-scale-garbage-is-infrastructure-not-behavior/>.

What does it mean to study a municipal waste system? Before proceeding I will outline the basic structures and components of a municipal waste system and provide some basic definitions to set the stage. Municipal solid waste is the everyday material that we think of as garbage. It goes by many names—waste, refuse, discards, trash, putrescibles, and on and on. In the early days of municipal solid waste management, municipal solid waste was composed of a variety of material streams, each which had their own name. Garbage was “rejected food wastes;” refuse was “combustible articles from all sources;” and night soil, offal, ashes, and street sweepings also had their own categories.¹⁴ At this time municipal solid waste consisted of all of these materials and was collected from commercial establishments, including restaurants, and businesses, from households, and from the street.

In most municipal systems now, managers do not distinguish between refuse and garbage, and municipal waste managers no longer collect night soil or offal. In current parlance, municipal solid waste now consists of two basic streams: commercial waste and household or residential waste. Commercial waste is the non-hazardous wastes from stores, restaurants, offices, hotels, and other non-industrial commercial establishments. Household waste, also referred to as residential waste, consists of all waste generated by households in single and multi-family arrangements.

Municipal solid waste or MSW—that is the streams of commercial and household wastes—is managed locally. Each city and town has its own unique history, infrastructure, institutions and management strategies. But there are some common patterns that characterize many, if not most, larger U.S. municipalities. In small towns, it is common for residents to organize their own waste collection, either through drop-offs to local or county dumps or transfer stations, or by contracting

¹⁴ William Francis Morse, *The Collection and Disposal of Municipal Waste* (The Municipal Journal and Engineer, 1908), 13.

individually with a hauler. But in most larger municipalities, municipal or county governments provide waste collection service to households. Commercial waste is usually contracted individually with little municipal oversight.

The organization of municipal waste systems presents a few inherent barriers for institutional and infrastructural change. For instance, the division between commercial and residential waste means that many cities directly control only a small portion of the total municipal waste stream, a scenario that presents a challenge for cities that seek to aggressively curtail waste generation and disposal. In large U.S. cities, residential waste management is most commonly financed through property taxes, which means that while residents are paying for the services, they have no information about how much the service costs.¹⁵ This arrangement also puts municipal waste managers at the mercy of municipal budgeting procedures, meaning they have little flexibility for programmatic innovation.¹⁶

For residential wastes, municipalities typically manage collection, transfer and disposal. Some municipalities maintain municipal collection staff and a fleet of trucks; some own and operate transfer stations, landfills, recycling, composting or combustion facilities. For the most part, though, municipalities manage contracts with private sector service providers for collection, transfer, and final disposal.¹⁷

¹⁵ A recent survey of U.S. cities with populations over 100,000 found that over 65% of cities finance waste management through property taxes. Only 25% have pay-as-you-throw financing in which residents pay directly for the amount of waste they dispose Eran Ben-Joseph et al., “Solid Waste Management and Sustainable Consumption: A Survey about Municipal Practices in the U.S.,” 2016, on file with author..

¹⁶ Judith A. Layzer et al., “Municipal Composting Assessment,” Urban Sustainability Assessment (USA) Project (Massachusetts Institute of Technology, April 20, 2013).

¹⁷ Ben-Joseph et al., “Solid Waste Management and Sustainable Consumption: A Survey about Municipal Practices in the U.S.”

The majority of municipal solid waste, both commercial and residential, is landfilled in the U.S., though the proportion of the total waste stream that is landfilled has fallen steadily between 1960 and 2013. In 1960, 93% of MSW was disposed in landfills; by 2013, that percentage had declined to just over 50%. Because of steady growth in the waste stream however, the total landfilled tonnage rose dramatically from 82,000 in 1960 to 134,000 in 2013. The MSW that is not landfilled is either recycled (approximately 25.5%); composted (8.8%); or combusted for energy recovery (12.9%).¹⁸

According to a 2016 survey of large municipalities, over half of large U.S. cities offer some kind of recycling program; these can range from drop-off facilities to curbside collection. Single stream collection of co-mingled plastics, paper, cardboard, metals, and glass is increasingly the norm for municipal recycling in urban areas. While over half of cities surveyed had yard waste recycling programs, only about 10% of large municipalities offer composting for food scraps. Over 40% of large cities surveyed have a formally adopted goal for waste diversion, which is in some cases, very ambitious.¹⁹ At least 11 large U.S. cities have formal plans to reach “Zero Waste,” a proposition that means reducing materials sent to landfills to vanishingly small quantities, usually targeted to be 10% or less of the total waste stream. The Zero Waste movement will be discussed in more depth in Chapter 3.

In addition to recycling and composting, many municipalities also rely on some form of garbage incineration to generate steam or electricity. The question of combustion is highly controversial in the U.S. context. Open burning in dumps and primitive combustion were common waste treatment techniques for much of the 19th and 20th centuries. It fell out of favor as issues of pollution and ash

¹⁸ EPA, “Advancing Sustainable Materials Management: Facts and Figures 2013.”

¹⁹ Ben-Joseph et al., “Solid Waste Management and Sustainable Consumption: A Survey about Municipal Practices in the U.S.”

management came under public scrutiny in the mid-20th century. But the convenience of combustion for urban areas with limited landfilling opportunities has ensured that technologies for combustion continue to evolve. By the 1960s, new technologies for steam and electricity generation that had been developed in Europe began to make their way to the American market. Under a variety of names—energy recovery, resource recovery, waste-to-energy (WTE)—private investors began marketing incineration of garbage for electricity generation to cities. As will be explored in the following chapters, many cities attempted to build incinerators, but for a variety of reasons, the technology failed to take hold. As of 2013, there were 80 waste-to-energy facilities operating across the country, and they continue to be controversial.²⁰ Many sustainability and environmental justice activists argue that incineration, even with energy recovery, is a disincentive to recycle or reduce waste generation.²¹ WTE advocates argue that it is renewable energy that reduces the burden of landfilling.²²

In short, municipal waste management is comprised of physical infrastructures including transfer stations, recycling facilities, landfills, and incinerators, and a variety of institutions, actors, relations, and controversies. It also includes, of course, garbage itself, a diverse stream of materials that we generate in almost everything we do.

This study draws on and builds on insights from critical discard studies, environmental history, environmental sociology to explore what planners can learn from garbage. Garbage is pervasive, and yet invisible. It structures our relationships with space, resources, place, and the state in

²⁰ EPA, “Advancing Sustainable Materials Management: Facts and Figures 2013.”

²¹ GAIA, “Burning Public Money for Dirty Energy: Misdirected Subsidies for ‘Waste-to-Energy’ Incinerators” (Global Alliance for Incinerator Alternatives, November 2011).

²² US EPA, “Energy Recovery from the Combustion of Municipal Solid Waste (MSW),” Overviews and Factsheets, accessed January 12, 2017, <https://www.epa.gov/smm/energy-recovery-combustion-municipal-solid-waste-msw>.

particular ways, and yet we, as planners, have given it relatively little attention. In the ensuing chapters, I will make the case that garbage offers critical lessons for planners both in terms of planning processes and infrastructural transformation for sustainability.

Research Questions and Summary of Findings

The generation of garbage in the United States, like the production of infrastructure, is related to broad social and economic paradigms. As will be discussed in depth in Chapter 2, societies define, generate, and manage wastes in coordinated ways, through “waste regimes.” Waste regimes are shaped by national policy and economic and social structures. Seattle and Boston, both coastal, progressive cities in the United States, operate within the same national waste regime, and yet seem to have dramatically different municipal waste systems.

This dissertation explores waste management in Seattle and Boston and asks if the two systems are in fact meaningfully different. Are superficial differences in recycling rates and programmatic structure evidence of substantially different relationships to the national waste regime in which both cities are situated? If they are meaningfully different, then how are particular path dependencies established by the waste regime expressed and overcome in cities? And finally, what does successful waste system change teach us, if anything, about repositioning urban infrastructure as part of a sustainable city?

The comparison of waste management evolution from the 1980s through 2016 in Seattle and Boston, reveals that municipal waste management has in fact changed radically in Seattle, while remaining relatively stable in Boston. Not only does the Seattle recycle, compost, or otherwise reuse almost 60% of its total waste stream—including both commercial and residential—but a close

examination of the system reveals fundamental reorientations of some key waste management institutions. The key transformations in Seattle include: First, the problem of garbage was redefined. It went from being a disposal problem to a complex problem of resource management. As a result of problem redefinition, Seattle's waste managers and city leadership established a new set of goals and priorities that include diversion and waste reduction rather than disposal. In response to new goals, both physical infrastructure and waste management institutions—systems of accountability, expectations, and the system's regulatory structure, among other things, were rebuilt to support the new goals. And finally, through these transitions, the roles of citizens and states transformed from a client-service provider relationship to a partnership in which all work together towards system goals. Key to the Seattle story is that Seattle's waste system incorporates a range of values and knowledge that far exceeds a typical waste management system. This is a factor both within and outside the waste management staff--the city's waste managers possess a range of skills and knowledge. But waste managers also support robust public engagement and propel programmatic experimentation, meaning that residents' views, values, and knowledge are also included in planning and programmatic development.

What is remarkable about Seattle's waste system is not the specific programs like curbside recycling—other cities, including Boston, have similar programs. The significance of Seattle's transformation lies in the whole scale reimagining of the problems and potentials of garbage, from the smallest scale of an individual purchase, through urban scale relations between households and the city government, to the macro-scale of product design and interstate waste transportation.

While the changes in Seattle are radical, they have been implemented incrementally, giving residents time to learn new habits, and adapt to new systems.

The nature of change in Seattle suggests a key role for planners in waste management and other infrastructural transformations. In Boston, as we will see, a lack of coherent planning cut off possibilities for a more imaginative approach to solid waste management; in Seattle, though, a variety of organized and informal sources of public input shaped waste management decisions. The solid waste staff, which included planners, economists, ecologists, and waste engineers, had the institutional capacity to manage such a process, and the professional orientation to find such input legitimate and valuable. Waste management is social and material; emplaced and in motion; political and technological. In Seattle, the strong leadership of planners embraced these characteristics of waste management and was able to harness the system towards new ends. In Boston, lacking the vision of politicians or planners, other political priorities drove waste management decisions and the system defaulted to traditional objectives by traditional means.

Research design and methods

Much of the work on waste systems within planning focuses on cities and countries in the Global South where waste management is not always a fully institutionalized public service. The emphasis in this body of work is to facilitate improved waste management—more comprehensive service, better environmental protections, decreased corruption, etc. However, when viewing solid waste as a resource problem, or even as a consumption problem, the major garbage offenders tend to be the places where garbage is the least visible. Wealth is a key indicator of solid waste generation, and the U.S. is among the high per capita generators of waste in the world.²³ Thus in exploring waste

²³ According to the World Bank, the United States generates 2.58kg/capita/day of MSW. This puts the U.S. ahead of the average generation rate of high income countries (2.13kg/capita/day), over twice as high as upper middle income countries (average of 1.16kg/capita/day) and over four times more than lower income countries (average of 0.6kg/capita/day). There are several small, low income countries that generate much higher volumes of waste per capita. At the extreme end, Trinidad and Tobago averages over 14kg/capita/day. This anomaly may be in part due to accounting—data on waste generation are notoriously unreliable—but also economies supported mainly by tourism substantially over estimate the amount of waste generated by residents (since tourists tend to generate much higher amounts of garbage). Further, given the size of the U.S. population, and its resource consumption and waste generation

system change as an example of infrastructure sustainability in cities, I have chosen to situate this work in the U.S. context; we have more to learn here about sustainable material management than most other places on earth. Additionally, for the most part, waste management in the U.S. is a municipal responsibility, that proceeds with very little guidance from higher levels of government. Therefore, U.S. cities provide good examples of what municipalities are able to accomplish on their own in terms of sustainable waste management, and where the limits to municipal action lie.

Comparative cases

This project uses a comparative case design. Case studies, by definition, allow the researcher to “investigate a contemporary phenomenon within its real-life context; when the boundaries between the phenomenon and context are not clearly evident; and multiple sources of evidence are used.” In the United States, all municipal waste systems are governed by a set of federal policies and by a dominant economic regime of consumption and waste generation, but there is nevertheless considerable variation because the actors, local regulations, regional geographies and physical artifacts in each municipality are unique. To study waste systems in historical context requires in depth case research: numerical shorthand such as waste generation rates or recycling rates cannot account for the complexity of relations that constitute a waste system.

Further, case research allows for a praxis approach. It allows us to “carry out analysis and interpretations of the status of social values and interest in society aimed at social commentary and social action.”²⁴ The primary object of this analysis is understanding; however, I hope that the

profile, it massively overshadows small, poor countries with higher per capita MSW generation rates. For example, Trinidad and Tobago generates a daily total 2,082 tons of MSW compared to the U.S. rate of 624,700 tons/day. (Daniel Hoornweg and Perinaz Bhada-Tata, “What a Waste: A Global Review of Solid Waste Management,” Urban Development Series (The World Bank, March 2012).)

²⁴ Bent Flyvbjerg, *Making Social Science Matter: Why Social Inquiry Fails and How It Can Succeed Again*, Eighth Printing (Cambridge, MA: Cambridge University Press, 2006), 60.

conclusions provide some insights into how we—regardless of our role in the waste system—and the large array of professionals managing the vast streams of garbage we produce, push back against disposability, “convenience,” cheapness, and newness, and the practices of hiding our wastes that play an important role in the dangerously profligate patterns of our economy.

For this project, comparison is critical because the question concerns the nature of system change over time. Since I am particularly interested in systems that evolve in way that runs counter to the dominant strategies and technologies of disposal, then comparing a case that behaves more or less as expected with a case that has taken a different path allows for analysis of both the factors that reinforce socio-technical path dependence, and factors that support change.

Case Selection

I selected two cases for this study, one “deviant case,” in which “in which an outcome that had been predicted by theory did not occur,”²⁵ and a base case, in which the outcomes are closed to what theory leads us to expect. In the U.S. context, as mentioned above, there is great variation in municipal solid waste management outcomes. Thus, there is no city or municipality that perfectly represents “the average” American waste system. Therefore, I first selected the deviant case, and then selected a base case along a number of variables to make a good comparison.

A number of U.S. cities have ambitious waste diversion and reduction goals. There is no comprehensive record of municipal waste planning, so I searched BioCycle, a magazine devoted to sustainable waste management and asked experts practitioners in order to identify the sustainable

²⁵ Rebecca Jean Emigh, “The Power of Negative Thinking: The Use of Negative Case Methodology in the Development of Sociological Theory,” *Theory and Society* 26, no. 5 (1997): 649–84.

waste management “leaders” in the field. Table 1 shows a compiled list of medium to large cities that have formally adopted zero waste, or nearly zero waste plans. From this list, I selected Seattle for a number of reasons. First I ruled out the California cases because California has a unique set of state laws that mandate and enforce dramatic recycling goals. This means that California cities make great cases for understanding the affects of ambitious state policy, but are less useful for understanding what cities can accomplish on their own. Also, the state policy framework makes California cities more difficult to compare with cities in other states, unless state policy is the key dependent variable.

I then ruled out New York City, Dallas, and DC, which were just starting to work on Zero Waste plans when this research project began, and did not yet have substantial results. That left Portland, Austin, Minneapolis, and Seattle. From this set, I selected Seattle because its programs are mature, (Austin and Minneapolis’s plans and programs are newer). Also, its population is slightly larger, denser, and more diverse than Portland’s.

Table 1.1. U.S. Cities with Zero Waste Plans²⁶

City	Diversion Goal	Published Diversion Rate	How Rate is Calculated	Pop.	Pop. Density
San Francisco	Zero waste by 2020	80%	(residential + commercial + biosolids + construction waste diverted) / (total residential + commercial + biosolids + construction waste generated)	864,000	18,451/m ²
Los Angeles	90% diversion by 2025	76%	Residential waste diverted /total residential waste collected	4.0 mil	8,282/m ²
Portland	75% by 2015	70%	(residential + commercial waste diverted) / (total residential + commercial waste collected)	583,776	4,375/m ²
San Diego	Zero waste by 2040	68% (as of 2012)	(residential + commercial waste diverted)/(total residential + commercial waste collected)	1.4 mil	4,003/m ²
Seattle	60% by 2015; zero waste by 2025	58%	Residential + commercial waste diverted/total residential + commercial waste collected	684,000	8,000/m ²
Austin	90% diversion by 2040	42%	Residential + commercial waste diverted/total residential + commercial waste collected	931,830	3,358/m ²
Minneapolis	80% diversion by 2030	35.6%	(residential recycled + composted) / (recycled + composted + waste to energy + landfilled)	410,000	7,485/m ²
Washington, D.C.	80% diversion by 2032	28%	Residential waste diverted /total residential waste collected	672,228	11,011/m ²
New York City	Zero Waste by 2030 for residential sector	16.9%	Residential tons diverted/total residential tons collected	8.5 mil	28,000/m ²
Dallas	Zero waste by 2040	Current rate not published	Not published	1.3 mil	3,645/m ²
Oakland	75% diversion by 2040	Current rate not published	(residential + commercial waste diverted) / (total residential + commercial waste collected)	419,000	7,417/ m ²

Once I had selected Seattle, I selected Boston as the comparative case. Boston shares many key characteristics with Seattle: the two cities are similar in land area, population, geography, fiscal

²⁶ Population estimates from the U.S. census; diversion rate goals, published diversion rates, and rate calculation techniques from city websites and the following sources: Samantha MacBride, "San Francisco's Famous 80% Waste Diversion Rate: Anatomy of an Exemplar," *Discard Studies*, December 6, 2013, <http://discardstudies.wordpress.com/2013/12/06/san-franciscos-famous-80-waste-diversion-rate-anatomy-of-an-exemplar/>.

resources, and a reputation for progressive politics (see Table 2). Both cities are relatively wealthy, have strong industrial histories, and are located in states with somewhat progressive waste management frameworks. Furthermore, in the 1980s Seattle and Boston both experienced major waste disposal capacity crises that drove costs up considerably and forced the issue of garbage onto municipal agendas. The outcomes of this crisis launched the cities onto totally divergent waste management trajectories. Seattle's recycling rate was 58% as of 2015.²⁷ Boston's, on the other hand, is reported to be around 19%.²⁸ Even accounting for variation in counting method, these two cities represent and above- and below-average diversion profiles.

There are some key differences between the two systems that should be acknowledged up front. One key difference is that Seattle's waste system was, and remains, managed by a utility that charges rates for service. Boston's system is managed by the Public Works Department and financed through the city's general budget. This is a somewhat significant difference, and system financing has been shown to affect how waste systems tend to innovate over time.²⁹ Also, in the 1980s, Seattle operated two landfills that were leased in the neighboring city of Kent; thus when it ran out of landfill capacity, it was forced for the first time contract for disposal. Boston's local capacity had run out about a decade earlier; by the time the waste disposal crisis ramped up in Boston, the city was already contracting for disposal elsewhere. But, neither city had formal recycling programs at that point, and both cities contracted with private haulers for the collection and transfer of solid waste. And, while things like the ownership of disposal facilities and a utility structure can facilitate

²⁷ Seattle Public Utilities, "2015 Recycling Rate Report" (Seattle, WA: City of Seattle, July 1, 2016), http://www.seattle.gov/util/cs/groups/public/@spu/@garbage/documents/webcontent/1_052510.pdf.

²⁸ City of Boston, "Mayor's Performance Report: Boston Public Works and Transportation Departments," Boston About Results, (December 2009), https://www.cityofboston.gov/Images_Documents/PWD-BTD_BAR%20FY10%20Q2_tcm3-17783.pdf.

²⁹ Judith A. Layzer et al., "What Works and Why: Identifying Effective Urban Sustainability Initiatives," Urban Agriculture Assessment, Urban Sustainability Assessment (USA) Project (Massachusetts Institute of Technology, March 2013).

programmatic innovation, they do not guarantee it. Many cities without a utility structure have made more progress than Boston, and many cities with such a structure have made less progress than Seattle.³⁰

Studying only Seattle would reveal much about a case widely interpreted as a success story. The comparison between Boston and Seattle allows for assessment of which variables are meaningful in the transformation process. The comparison is imperfect in that Boston has not remained completely static, nor have Boston and Seattle been strictly identical at any point. Nevertheless, the similarity between the two cities, and the limited degree of change in Boston during a period of substantial change in Seattle makes the pairing analytically useful.

Table 1.2. Boston and Seattle City and Waste System Characteristics

		Boston	Seattle
City Statistics	Population	667,000	684,000
	Land area	48.42 sq mi	83.87 sq mi
	Population density	13,841/sq mi	8,161/sq mi
	City GDP	\$336 bn	\$258 bn
Waste System Characteristics	Recycling rate	19%	58.8%
	Composting	Seasonal yard waste	Year-round yard waste and food scrap
	Material Bans / Fees	None	Styrofoam ban Single-use plastic bag ban
	Planning	None	Solid waste plan updated every five years
	Newest program	Single stream in 2012	Mandatory food scrap composting 2015

³⁰ Ben-Joseph et al., “Solid Waste Management and Sustainable Consumption: A Survey about Municipal Practices in the U.S.”

Data Collection and Analysis

In order to compare the trajectory of the two cases from the 1980s to today, the primary data sources were archival. A list of archives used for this study can be found in Appendix A. Archival data was rich and well organized in Seattle, thin and messy in Boston. Each presented its own challenges.

In Seattle, I spent about five weeks over several visits in the municipal archives. There I gathered over 3500 documents related to the research questions, and this was just a fraction of what was in the archive. When certain types of material were simply too abundant, I gathered what I considered to be “representative” documents; of the tens of thousands of constituent letters, for example, I tried to gather examples of all the various sentiments in rough proportion to what was in the files. For example, there were thousands of letters against a proposed incinerator. I recorded a few hundred that conveyed a range of reasons for opposition and counter-proposals; since there were only a handful of letters in support of the incinerator, I copied all that I came across. The Seattle archives were full of drafts of letters and reports, inter-departmental correspondence that showed in detail where ideas originated and how they progressed to policy. I was able to see clearly, for example, how the Mayor’s thinking on key issues evolved over time.

In Boston, on the other hand, archival records were thin. Most the records on the relevant topics during the relevant time period, a Boston archivist explained to me with chagrin, had been left moldering in a city basement, and been rendered unsalvageable. The records that were available simply contained fewer documents; and of the documents that were saved, fewer revealed draft thinking or ideas in evolution. Documents were more likely to be transcripts from speeches and press releases than correspondence on policy.

In both cities I relied heavily on local press coverage. In Boston, faithful coverage of solid waste by *Boston Globe* was a critical source. It allowed me to create a detailed timeline of events, and quotes from public officials introduced characters who were entirely absent from the archives. For the Boston case, the news articles proved to be a useful source of quotes from local and state politicians. While these quotes are selected by the reporters, sometimes out of context, and so cannot be taken to describe what a particular person really thought or did at any particular moment, they have the benefit of representing what average citizens would have understood to be the positions of political leaders, and thus would have been what they were reacting (or not reacting) to.

In Seattle, local press was equally important but for a different reason. The sheer volume of archival material, which was not always organized chronologically, made it difficult to construct a chronology of events and decisions. Local press, which I gathered both through archival news clipping files and online records, presented the chronologies more directly.

In both cities I reviewed current and historic resolutions, ordinances, reports and plans. In Boston, I also had access to the city's collection and disposal contracts that ran through 2014, that a local activist received through a Freedom of Information Act Request.

In addition to archival and other printed documents, the other key data source was interviews. In Seattle, I was able to interview key figures, including several people who worked for the solid waste utility during the 1980s, as well as other people who currently work in or advocate around waste management in the region. In Boston, interviewed several people who worked in city and state government during the 1980s, though I was not able to track down anyone who worked in Public

Works during that time period. I also interviewed over a dozen current public works and state government employees and local advocates who have been long time observers and agitators in around solid waste in Boston.

Finally, in both Seattle and Boston, I visited local solid waste facilities and paid attention to the everyday garbage habits of residents in domestic and public spaces, as part of my own everyday routines as I passed through each city.

In order to make sense of this data, I needed both to construct a historical record of concrete policies, plans, and programs that led each city to its current waste management profile, and also to identify the key factors that shaped each city's independent trajectory. Because the data was so different in each case, I had to use slightly different analytical methods.

Because the archival records for Boston were so spotty, I began by constructing a chronology from *Boston Globe* articles. I also coded the articles using a grounded theory technique to start to identify key themes as they were presented by the newspaper. Using a process tracing technique, I developed a set of hypotheses about what was happening at each critical moment, the significant issues for various sets of players, and an overall hypothesis about how and why Boston's waste system had evolved the way it had. I then coded the archival documents, still following a grounded theory protocol, but with attention to the categories of issues that had emerged through the review of the *Globe* articles. Interviews with people who had worked on waste in the 1980s in Boston took place relatively late in the research process since I had to unearth names from articles and track people down through sometimes circuitous routes. By the time I conducted the interviews, I was

able to code them alongside archival documents and use them to triangulate other sources, fill in gaps, and test the hypotheses I had developed from the review of secondary sources.

Within the Seattle case, since I had access to my observations of day-to-day waste practices in the city alongside contemporary reflections of key actors, and rich records of their work and voices from the archives, I approached data analysis through what Zsuzsa Gille has described as historical ethnography. This approach allows a researcher to “unpack the meanings” from archival sources and contemporary ones through the same methodological process.³¹ Gille argues that the practice entails an epistemological commitment from the researcher to

be surprised, to be caught of guard, and to be swept up in events that occur in the field as a result of which even the original directions of the inquiry may significantly change. This commitment is rooted in an insistence of the significance of from-below and partial perspectives for the understanding of an issue as well as for the construction of theory.³²

In Seattle I coded interviews and archival data together as I accrued it, developing first a sense of key themes and shifting dynamics. Only after substantial analysis, I went back to newspaper sources to provide a temporal ordering to the thematic structure that was emerging.

To compare the two cases, I wrote each as a single historical narrative. Once so compiled, the significant factors in each case were stark. I was able to streamline each narrative to identify and explicate those factors that were most significant while maintaining the integrity of the individual case by sticking close to the original narrative, even as the stories were narrated thematically and not chronologically.

³¹ Zsuzsa Gille et al., “Cognitive Cartography in a European Wasteland: Multinational Capital and Greens Vie for Village Allegiance,” in *Global Ethnography: Forces, Connections, and Imaginations in a Postmodern World* (Berkeley: University of California Press, 2000), 242.

³² Zsuzsa Gille, *From the Cult of Waste to the Trash Heap of History: The Politics of Waste in Socialist and Postsocialist Hungary* (Bloomington, IN: Indiana University Press, 2007), 35.

Summary of the dissertation

This dissertation will proceed in three parts. Part I explores garbage in theory. Chapter 2 constructs a theoretical framework for analyzing municipal waste system change. Building on theories of waste governance and waste regimes, it offers the concept of “wasteways” as a way to understand how municipal systems relate to, or resist, dominant regimes of waste and consumption. Chapter 3 elaborates the history of Waste Regimes in the U.S. context, and various movements to push waste and waste management into new paradigmatic territories over time. Through this brief whirlwind of the evolution to the current regime—the Weak Recycling Waste Regime—a summary of current visions for what sustainable waste management might look like is extracted.

Part II of the dissertation zooms out of theory and into place. It opens with a brief introduction of the national garbage disposal crisis in the early 1980s to set the stage. Across the country, landfill capacity was running short. At the same time, private investment in waste-to-energy incineration was blossoming. Both Seattle and Boston were facing increasing costs to export all their garbage, and both turned to local incineration as the solution and set to planning. Starting at this moment in Seattle, Chapter 4 looks at how the regional politics of waste disposal and the inclusion of a wide variety of voices entering the discourse on solid waste in the city triggered a wide open planning process that led to the redefinition of garbage as a material and as a problem. As a result, the city was able to consider a whole new set of possible solutions. This was the beginning of an “alternative wasteway,” that has allowed Seattle to continue to buck national waste trends. Chapter 5 starts at the crisis point in Boston, and traces how the play of power politics, competing infrastructural priorities, and a narrow discourse about waste planning left the underlying assumptions about garbage and garbage management intact. Although the incinerator proposal was eventually abandoned in Boston, it was a choice driven by other needs rather than proactive waste

planning. In keeping waste management narrowly defined throughout the crisis, Boston worked in a “mainstream wasteway.” The institutions and practices of waste management in the city support a macro-level waste regime of disposability.

By the end of the 1980s, both Boston and Seattle had weathered the worst of their crisis. Boston was almost exactly where it had been a decade earlier: exporting all of its garbage to regional facilities. Seattle, on the other hand, was poised for massive transformation. A series of plans and resolutions had made concrete changes to waste management in the city, including the redefinition of goals from efficient disposal to minimized disposal, the repositioning of garbage as a potential resource, and redefined roles for citizens and the state in the project of waste management. Chapter 6 compares the two cities wasteways through the trajectory of their waste systems in the ensuing decades. It traces how, through the alternative wasteway, incremental changes in Seattle’s system have continued to promote the radical new vision developed in the 1980s. The result is a system whose institutions, infrastructure, and programmatic profile, in addition to its outcomes resist pressures to keep waste out of sight and out of mind, even in the face of programmatic failure. Boston, on the other hand, despite a few notable new programs, has remained almost static over the last few decades. Programmatic innovation has not served a larger vision, and has failed to alter institutions, practices, or outcomes in any appreciable way. The chapter concludes with a discussion about the implications of the alternative wasteway for sustainable waste management and sustainability more broadly.

The concluding part offers up garbage as/in the future. Going back to questions of sustainability raised in Chapter 3, the final chapter explores the limits and promise for the alternative wasteway, and offers some concluding thoughts on what this research means for planners.

A note about audience

Most scholars of waste and waste systems take pains to position their work within larger and more general theoretical debates. Despite its pervasiveness in our homes, our cities, our ocean, even our bodies, waste has not, like energy or transportation attracted enough momentum of its own to be considered of interest in itself. With the exception of the brave and growing few who claim space within the interdisciplinary field of discard studies, and who take waste seriously as central object of analysis, most scholars of waste, even those who have worked on the subject for years elegantly position it as a convenient empirical example of a wide range of issues. And rightfully so. As Mary Douglas captured in *Purity and Danger*, our understanding of dirt is central to our understanding of ourselves. Waste, as the unseen, the undesirable, is perhaps the most telling artifact we create. This is obvious when we consider that the entire field of archeology is more or less based on the excavation and analysis of ancient waste heaps.

Understood in more contemporary terms, the production of waste is a key factor in every extant economic system. Observing where and how waste is generated, what it consists of, and how it is treated reveals as much about our systems of production and value—perhaps even more—than studying products and trade. Sociologists who understand waste tend to see it as a way to read social and economic systems. It is a lens that provides an honest view of our world.

Waste is also useful in more concrete ways too: at the individual level, garbologist William Rathje showed us that trash provides the most accurate picture available of what and how we consume. It tells us exactly what we value and what we don't. It tells us about how we spend our time, how much money we have, how many children we have, our religious affiliations and so much more.

Observing how societies organize the management of waste transcribes those questions at a larger scale: what does the society value? Which spaces are valued, and where are the “sacrifice zones?”³³ How are people expected to interact with the economy? What are the roles and responsibilities of government and of citizens?

In many contexts where waste management is fully operationalized as a civic responsibility, it usually sits at the nexus of a several different infrastructural systems and is characterized by the involvement of many layers of government, and many different realms of policy from waste specific, to public health, to environment, to commerce, to labor, and others depending on the nature of disposal, as well as the private sector, NGOs, a variety of technologies, and every single person who ever throws anything away. This makes waste of particular interests to scholars of governance who seek to understand how all of these components come together to create a functional, if not entirely coherent, public service.

This dissertation draws on a broad range of scholarly and theoretical traditions intentionally; it weaves together disparate literatures on waste, and draws on more general theory in order to build a theory of waste systems in U.S. cities. In so doing, it aims to help elevate solid waste systems to the level of attention and interest in water, wastewater and energy systems. It urges a broad audience to notice that *waste is not solved*. This dissertation will be of particular interest anyone who studies discards. But it should also be of interest to planners and urban professionals more broadly who have not given up on sustainability as a potential future. It provides insights beyond waste and sustainability into planning processes, the role of knowledge in policy making, and the processes

³³ Steve Lerner, *Sacrifice Zones: The Front Lines of Toxic Chemical Exposure in the United States*, Reprint edition (Cambridge, Mass.: The MIT Press, 2012).

and opportunities for governing infrastructure. Fundamentally, this work empowers cities as political agents that can resist the pull of unsustainable global regimes.

PART I : GARBAGE IN THEORY

CHAPTER 2

Waste Governance, Waste Regimes, and Wasteways: Towards a Theory of Municipal Waste Management

Introduction

This chapter constructs a theoretical framework for analyzing municipal waste systems. Waste as a phenomenon has been studied from nearly every disciplinary angle. Waste is politics; waste is death; waste is life. To understand municipal solid waste management requires some understanding of wasting itself as well as mechanisms and technologies of governance, and the political economics of urban processes. In the following chapter, several threads from literatures on waste and infrastructure governance are woven together with a larger social theory of waste and some key theories about problem-framing, expertise, and participation in order to build a theory of municipal waste management: wasteways. Wasteways describe how municipal waste management systems, which in most national contexts function largely independently, relate to larger political economic regimes of waste.

Municipal solid waste, the material with which this dissertation is concerned, is the everyday discards from household and non-hazardous commercial activities. In the U.S. industrial and hazardous wastes have historically been regulated separately from municipal waste, a legacy of federal classificatory schemes that were designed to respond to particular environmental crises.³⁴ A municipal waste management system is a loosely constituted network of public and private actors that managed this particular waste stream. City's waste systems are almost as diverse as city's themselves, but in the U.S. context, they share some fundamental similarities. In small towns and rural areas, there may be no centrally coordinated waste system. But in larger, denser settlements,

³⁴ Joel A. Tarr, *The Search for the Ultimate Sink: Urban Pollution in Historical Perspective* (Akron, Ohio: The University of Akron Press, 1996).

waste systems are typically constituted by some set of public sector managers, either in a Utility or Department who oversee the collection and disposal of at least a portion of the city's waste stream. Waste governance, then, refers to the processes of managing material streams and making consequential decisions about how to manage garbage.

As the following chapter will show, waste governance, which often includes multiple scales of government, as well as private firms, civil society organizations, and citizens, deals just with the management of garbage once it already exists. I thus draw on Zsuzsa Gille's theory of waste regimes to place help contextualize theories of governance within the social phenomena of creating and defining waste. Then, by layering a more in depth theoretical look at participation, problem framing, and expertise—key factors in the technocratic field of waste management, I offer a theory of wasteways to explain how unique municipal systems relate to dominant regimes of waste defining, and waste making.

Waste Governance

Solid waste, as a public problem, is a particularly urban phenomenon.³⁵ As cities industrialized and grew denser, solid waste became an agglomerated category that included a whole host of materials that in rural contexts would have had other uses, or in any case could have been dumped behind the barn and no one the wiser. In other words, the “problem” of waste emerges with densification. In technocratic terms, cities “manage” waste—a name for a process that Moore shows us already implies particular assumptions about waste as matter. In the technocratic usage, waste management implies a definition of waste as a material that is separate from society by virtue of its undesirable,

³⁵ Matthew Gandy, *Recycling and the Politics of Urban Waste* (London: Earthscan, 1994), 2.

even hazardous qualities. It is in this context, a “manageable object,”³⁶ and thus something that can be governed. If we accept the terminology as a shorthand for all of the various possibilities for handling, removing, reusing, coping, everything but ignoring, waste, how do we do it?

In urban contexts where garbage is managed collectively through public agencies, it is through the process of coping with wastes that they are socially and politically defined. The following chapter will examine processes of problem definition in the U.S. context more directly; but first, I will focus on the larger questions of how we conceive of governing solid waste.

The literature on waste governing is quite large, though unlike transportation, energy, or other infrastructural systems, it has not yet developed its own internal discourse. There are a several journals devoted to the study of waste management, but for the most part, these outlets emphasize the technical aspects of waste collection and treatment, rather than questions of governance. Waste governance studies are almost always case-based, and oriented towards the testing of theory from a range of disciplines. Within this literature, there are several threads whose thematic content is generally collated into two distinct groups. First there is the waste governance literature that focuses on municipal waste systems in cities of the Global South. This literature tends to evaluate uneven service provision, the failure of “good governance” schemes to improve both waste service provision and waste treatment quality, and to offer practical and theoretical possibilities for more even, comprehensive, and formalized waste service.³⁷ But of more direct relevance here is the broad

³⁶ Sarah A. Moore, “Garbage Matters Concepts in New Geographies of Waste,” *Progress in Human Geography* 36, no. 6 (December 1, 2012): 780–99, doi:10.1177/0309132512437077.

³⁷ Carl R. Bartone et al., “Private Sector Participation in Municipal Solid Waste Service: Experiences in Latin America,” *Waste Management & Research* 9, no. 6 (December 1, 1991): 495–509, doi:10.1016/0734-242X(91)90050-H; Basil van Horen, “Fragmented Coherence: Solid Waste Management in Colombo,” *International Journal of Urban and Regional Research* 28, no. 4 (2004): 757–773, doi:10.1111/j.0309-1317.2004.00550.x; Garth Andrew Myers, *Disposable Cities: Garbage, Governance and Sustainable Development in Urban Africa* (Aldershot, Hants, England ; Burlington, VT: Routledge, 2005); Sakira Rathi, “Alternative Approaches for Better Municipal Solid Waste Management in Mumbai, India,” *Waste*

body of literature that has emerged from European countries assessing the governance of waste in setting where service provision is relatively extensive, strong environmental policy provides a basic framework for the quality of disposal facilities, and core questions about the potential roles of the public, private, and civil sectors are relatively similar to U.S. context. This literature offers a number of issue framings and questions.

The starting point for this literature is the “hybridity” of waste systems, or the interaction between multiple organization, jurisdictions, and stakeholders and networks.³⁸ These interactions make waste management, particularly useful to the study of governance, which takes as a central question how governing happens as previously state-dominated processes are increasingly spread across multiple actors.³⁹

A key thread in the governance literature looks specifically at the challenges of implementing national and supra-national environmentally-driven waste management directives. In the European context in particular, directives from the E.U. and from national governments have had uneven

Management 26 (2006): 1192–1200; A. Imam et al., “Solid Waste Management in Abuja, Nigeria,” *Waste Management* 28, no. 2 (2008): 468–72, doi:10.1016/j.wasman.2007.01.006; Ntlibi Matete and Cristina Trois, “Towards Zero Waste in Emerging Countries - A South African Experience,” *Waste Management* 28 (2008): 1480–92; Shahjahan H. Bhuiyan, “A Crisis in Governance: Urban Solid Waste Management in Bangladesh,” *Habitat International* 34, no. 1 (January 2010): 125–33, doi:10.1016/j.habitatint.2009.08.002; Gurdal Kanat, “Municipal Solid-Waste Management in Istanbul,” *Waste Management* 30, no. 8–9 (August 2010): 1737–45, doi:10.1016/j.wasman.2010.01.036; Dong Qing Zhang, Soon Keat Tan, and Richard M. Gersberg, “Municipal Solid Waste Management in China: Status, Problems and Challenges,” *Journal of Environmental Management* 91, no. 8 (August 2010): 1623–33, doi:10.1016/j.jenvman.2010.03.012; James Okot-Okumu and Richard Nyenje, “Municipal Solid Waste Management under Decentralisation in Uganda,” *Habitat International* 35, no. 4 (October 2011): 537–43, doi:10.1016/j.habitatint.2011.03.003; Lilliana Abarca Guerrero, Ger Maas, and William Hogland, “Solid Waste Management Challenges for Cities in Developing Countries,” *Waste Management* 33, no. 1 (January 2013): 220–32, doi:10.1016/j.wasman.2012.09.008; Camilla Louise Bjerkli, “Governance on the Ground: A Study of Solid Waste Management in Addis Ababa, Ethiopia,” *International Journal of Urban and Regional Research* 37, no. 4 (July 1, 2013): 1273–87, doi:10.1111/j.1468-2427.2013.01214.x; Chukwunonye Ezeah and Clive L. Roberts, “Waste Governance Agenda in Nigerian Cities: A Comparative Analysis,” *Habitat International* 41 (January 2014): 121–28, doi:10.1016/j.habitatint.2013.07.007.

³⁸ Katja Lindqvist, “Hybrid Governance: The Case of Household Solid Waste Management in Sweden,” *Public Organization Review* 13, no. 2 (June 1, 2013): 143–54, doi:10.1007/s11115-013-0229-8.

³⁹ R. A. W. Rhodes, “The New Governance: Governing without Government,” *Political Studies* XLIV (1996): 652–67; Gerry Stoker, “Governance as Theory: Five Propositions,” *International Social Science Journal* 155 (1998): 17–28.

impacts on regions and municipalities. Several studies in the U.K. context revealed the degree to which a mismatch between priorities at different levels of government has inhibited the local and regional implementation of national and supra-national objectives.⁴⁰ Studies also show that national policy is likely to fail if it expects local authorities to cooperate around regional infrastructure in the absence of regional institutions.⁴¹ On the other hand, institutions that are organized quickly at the behest of national policy to advise regional goal implementation may not be able to adequately respond to particular local histories and priorities.⁴²

In addition to concerns about scalar mismatches in priorities and institutions, there has been much attention to the question of public participation in waste planning. A great deal of attention has been paid particularly to the issue of waste facility siting. While some of the literature remains locked in an expert-driven discourse that suggests if citizens simply had better information they would accept facilities,⁴³ since the 1990s, scholars of waste governance have taken a more nuanced stance. Mirroring the wider literature on participation in planning, there is general agreement that increased participation of a variety of stakeholders in waste planning increases the likelihood of waste management strategies that are both broadly accepted and also satisfy a range of goals and priorities beyond that cost effective waste collection and removal.⁴⁴

⁴⁰ Jordan P. Howell, “‘Modes of Governing’ and Solid Waste Management in Maui, Hawaii, USA,” *Environment and Planning A* 47, no. 10 (October 1, 2015): 2153–69, doi:10.1177/0308518X15599286; Harriet Bulkeley et al., “Governing Municipal Waste: Towards a New Analytical Framework,” *Journal of Environmental Policy & Planning* 7, no. 1 (March 1, 2005): 1–23, doi:10.1080/15239080500251700; Simin Davoudi, “Planning for Waste Management: Changing Discourses and Institutional Relationships,” *Progress in Planning* 53, no. 3 (April 1, 2000): 165–216, doi:10.1016/S0305-9006(99)00023-9; Måns Nilsson, Mats Eklund, and Sara Tyskeng, “Environmental Integration and Policy Implementation: Competing Governance Modes in Waste Management Decision Making,” *Environment and Planning C: Government and Policy* 27, no. 1 (February 1, 2009): 1–18, doi:10.1068/c0794j.

⁴¹ Mark Boyle, “Cleaning up After the Celtic Tiger: ‘Scalar Fixes’ in the Political Ecology of Tiger Economies,” *Transactions of the Institute of British Geographers* 27, no. 2 (2002): 172–94.

⁴² Davoudi, “Planning for Waste Management.”

⁴³ See for example: Ch. Achillas et al., “Social Acceptance for the Development of a Waste-to-Energy Plant in an Urban Area,” *Resources, Conservation and Recycling* 55, no. 9–10 (July 2011): 857–63, doi:10.1016/j.resconrec.2011.04.012.

⁴⁴ Anna Davies, “Waste Wars: Public Attitudes and the Politics of Place in Waste Management Strategies,” *Irish Geography* 36, no. 1 (2003): 77–92; Judith Petts, “Effective Waste Management: Understanding And Dealing With Public

Judith Petts argues that effective waste management requires effective waste planning, and effective waste planning requires more than consultative participation. Places that have succeeded in engaging a variety of stakeholders through long-term and meaningful processes of exchange are more likely to be able to meet stated goals and objectives.⁴⁵ While Petts finds one very successful case of public participation in waste planning, not all contexts are equally successful in managing participation. Places with a higher degree of political infighting and weaker traditions of collaborative decision-making are not able to manage these processes as effectively as places that are politically unified and have a higher degree of trust build among citizens and elected officials.⁴⁶ Petts argues further that iterative and deliberative decision-making models are ultimately the most effective tools for making decisions that adequately address the uncertain nature of intergenerational risk posed by waste treatment facilities.⁴⁷

In addition to arguing for enhanced public participation in waste planning and decision-making, scholars have explicitly argued for experts to take citizen opposition seriously. Rather than viewing opposition as blanket NIMBYism, it should be viewed as diverse, grounded, and legitimate.⁴⁸

Concerns,” *Waste Management & Research* 12, no. 3 (June 1994): 207–22, doi:10.1006/wmre.1994.1011; David Laws, Lawrence Susskind, and Jason Corburn, “Siting Municipal Solid Waste Facilities,” in *Handbook of Solid Waste Management*, ed. George Tchobanoglous and Frank Kreith, Second (New York: McGraw-Hill, 2002), 15.1-15.18; Simin Davoudi and Neil Evans, “The Challenge of Governance in Regional Waste Planning,” *Environment and Planning C: Government and Policy* 23, no. 4 (2005): 493 – 517, doi:10.1068/c42m.

⁴⁵ Judith Petts, “Incineration Risk Perceptions and Public Concern: Experience in the U.K. Improving Risk Communication,” *Waste Management & Research* 10, no. 2 (April 1, 1992): 169–82, doi:10.1016/0734-242X(92)90070-2; Petts, “Effective Waste Management”; Judith Petts, “Waste Management Strategy Development: A Case Study of Community Involvement and Consensus-Building in Hampshire,” *Journal of Environmental Planning and Management* 38, no. 4 (December 1, 1995): 519–36, doi:10.1080/09640569512797.

⁴⁶ Richard Bull, Judith Petts, and James Evans, “The Importance of Context for Effective Public Engagement: Learning from the Governance of Waste,” *Journal of Environmental Planning and Management* 53, no. 8 (December 1, 2010): 991–1009, doi:10.1080/09640568.2010.495503.

⁴⁷ Judith Petts, “Municipal Waste Management: Inequities and the Role of Deliberation,” *Risk Analysis* 20, no. 6 (December 1, 2000): 821–32, doi:10.1111/0272-4332.206075.

⁴⁸ Petts, “Effective Waste Management”; Petts, “Waste Management Strategy Development”; Simin Davoudi, “The Evidence – Policy Interface in Strategic Waste Planning for Urban Environments: The ‘technical’ and the ‘social’ Dimensions,” *Environment and Planning C: Government and Policy* 24, no. 5 (2006): 681 – 700, doi:10.1068/c0609j.

Siskind and Susskind proposed a series of approaches to avoid stalemate and litigation over incinerator siting conflicts that take seriously the most common worries expressed by incinerator opponents including first implementing recycling programs, developing plans for continuous monitoring and contingencies, safe ash handling, and programs both for risk compensation and potential guarantees for mitigation.⁴⁹

Taking citizen opposition seriously is also operationalized through recognizing different forms of knowledge as legitimate in waste planning and decision-making processes. As with other infrastructures that have traditionally been technocratically managed, waste has been the domain of political elites and engineers (and sometimes, the mafia, although that piece of this sordid business's history has not been at all explored in the waste governance literature) and technocratic knowledge is generally valued more highly in decision-making processes than other forms of knowledge, leading to increased tension and decreased trust among stakeholders.⁵⁰ In a recent study from Sweden, it was found that information gathered through participatory planning exercises was ignored in favor of traditional economic analysis.⁵¹ In the U.S. context, though there is not a robust literature on waste governance explicitly, the same patterns of expert knowledge used to overpower

⁴⁹ Esther Siskind and Lawrence Susskind, "The Incineration Conflict: Addressing Public Concerns," *Environmental Impact Assessment Review*, no. 9 (1989): 317–29.

⁵⁰ Bull, Petts, and Evans, "The Importance of Context for Effective Public Engagement"; Petts, "Incineration Risk Perceptions and Public Concern"; Petts, "Waste Management Strategy Development"; Petts, "Effective Waste Management"; Judith Petts, "Barriers to Participation and Deliberation in Risk Decisions: Evidence from Waste Management," *Journal of Risk Research* 7, no. 2 (March 2004): 115–33; Judith Petts, "Enhancing Environmental Equity through Decision-Making: Learning from Waste Management," *Local Environment* 10, no. 4 (August 1, 2005): 397–409, doi:10.1080/13549830500160933; Judith Petts, "The Public—expert Interface in Local Waste Management Decisions: Expertise, Credibility and Process," *Public Understanding of Science* 6, no. 4 (October 1, 1997): 359–81, doi:10.1088/0963-6625/6/4/004; Davoudi, "The Evidence – Policy Interface in Strategic Waste Planning for Urban Environments"; Davoudi, "Planning for Waste Management."

⁵¹ Nilsson, Eklund, and Tyskeng, "Environmental Integration and Policy Implementation."

local or community experience has been surfaced and explored in the environmental justice literature, often in relation to the siting of waste facilities.⁵²

Anna Davies casts the governance of waste in spatial terms, which also captures issues of regional inequities; she argues that transnational anti-incineration networks, the nature of nationally directed incineration programs, and the flows of waste materials and pollution across political boundaries necessitate a geographically informed view of governmentality.⁵³ This approach allows for analysis of how national and supra-national directives relate to smaller scales of government, and of how municipalities and regions relate to each other; it also allows for the specific and emplaced incorporation of contextual histories of relations between nature, society, and policy.⁵⁴ Hultman and Corvellec, in a more recent study, pick up on the theme of how waste policies mediate nature-society relations to demonstrate how E.U. waste policies “blackbox” the economy and the environment and position infrastructure as the delineator between the two. But the policies, they argue, ultimately challenge the rationale of the separation by demanding the integration of economic and environmental goals through the reintroduction of used or remanufactured materials into the economy. This

has a legitimising effect on consumer practices. If the potential for disassembly and sorting is optimised in a commodity through its design, consumption might become self-generating. By defining waste as a resource, and organizing material circulation according to the EWH, incitements to decrease the rate of consumption diminish.

⁵² Merrie Klapp, “Bargaining with Uncertainty: The Brooklyn Navy Yard Incinerator Dispute,” *Journal of Planning Education and Research* 8, no. 3 (July 1, 1989): 157–66, doi:10.1177/0739456X8900800303; Elizabeth Neuffer, “Brooklyn Refuse Plan Raises Broad Concerns,” *The New York Times*, November 15, 1987, sec. N.Y. / Region, <http://www.nytimes.com/1987/11/15/nyregion/brooklyn-refuse-plan-raises-broad-concerns.html>; David Naguib Pellow, *Garbage Wars: The Struggle for Environmental Justice in Chicago* (Cambridge, MA: MIT Press, 2002); Robert D. Bullard, *Dumping in Dixie: Race, Class and Environmental Quality* (Boulder: Westview Press, 1994).

⁵³ Anna R. Davies, “Incineration Politics and the Geographies of Waste Governance: A Burning Issue for Ireland?,” *Environment and Planning C: Government and Policy* 23 (2005): 357–97.

⁵⁴ Anna Davies, *The Geographies of Garbage Governance: Interventions, Interactions, and Outcomes* (Aldershot, Hampshire, England; Burlington, VT: Ashgate, 2008); Anna R. Davies, “Clean and Green? A Governance Analysis of Waste Management in New Zealand,” *Journal of Environmental Planning and Management* 52, no. 2 (2009): 157–76, doi:10.1080/09640560802666503.

Eventually, they argue, consumption itself could be viewed “as an environmental act,” justified by waste management policy.⁵⁵

Others have looked more closely at these consumer practices themselves. On the one hand, a body of research on reuse and sharing has shown robust existing practices of material reuse, entirely outside of policy-driven waste management programs, particularly in the U.K. context, and particularly in certain segments of society, namely among more privileged consumers with robust social networks.⁵⁶ Unfortunately, the “handing down” of second hand goods is generally accompanied by the purchase of new things, which undermines the environmental benefit of reuse.⁵⁷ And, national waste management policies have consistently emphasized the “end-of-pipe” techniques rather than addressing questions of consumption or waste generation embedded in the waste hierarchy promoted by the E.U., the U.S. EPA and other environmentally oriented waste actors.⁵⁸

While some have explicitly called for increasing attention to individual behavior and the household scale,⁵⁹ others have challenged this framing. Individuals may actually have little control over what

⁵⁵ Johan Hultman and Hervé Corvellec, “The European Waste Hierarchy: From the Sociomateriality of Waste to a Politics of Consumption,” *Environment and Planning A* 44, no. 10 (October 1, 2012): 2413–27, doi:10.1068/a44668.

⁵⁶ Nicky Gregson, *Living with Things: Ridding, Accommodation, Dwelling* (Wantage: Sean Kingston Publishing, 2011); Nicky Gregson, Alan Metcalfe, and Louise Crewe, “Moving Things along: The Conduits and Practices of Divestment in Consumption,” *Transactions of the Institute of British Geographers* 32, no. 2 (April 2007): 187–200, doi:10.1111/j.1475-5661.2007.00253.x; Nicky Gregson, Alan Metcalfe, and Louise Crewe, “Identity, Mobility, and the Throwaway Society,” *Environment and Planning D: Society and Space* 25, no. 4 (August 1, 2007): 682–700, doi:10.1068/d418t; Harriet Bulkeley and Nicky Gregson, “Crossing the Threshold: Municipal Waste Policy and Household Waste Generation,” *Environment and Planning A* 41, no. 4 (April 1, 2009): 929–45, doi:10.1068/a40261.

⁵⁷ Bulkeley and Gregson, “Crossing the Threshold”; Gay Hawkins, “Plastic Bags Living with Rubbish,” *International Journal of Cultural Studies* 4, no. 1 (March 1, 2001): 5–23, doi:10.1177/136787790100400101.

⁵⁸ Terry Tudor et al., “Challenges Facing the Sustainable Consumption and Waste Management Agendas: Perspectives on U.K. Households,” *Local Environment* 16, no. 1 (n.d.): 2011; Bulkeley and Gregson, “Crossing the Threshold”; Harriet Bulkeley, Matt Watson, and Ray Hudson, “Modes of Governing Municipal Waste,” *Environment and Planning A* 39, no. 11 (November 1, 2007): 2733–53, doi:10.1068/a38269; Davoudi, “Planning for Waste Management.”

⁵⁹ Tudor et al., “Challenges Facing the Sustainable Consumption and Waste Management Agendas: Perspectives on U.K. Households”; Bulkeley and Gregson, “Crossing the Threshold.”

and how they consume. For instance, in many cases quality products that will last a lifetime are simply no longer available forcing consumers to frequently replace low-quality products from clothes to toasters.⁶⁰ Or, some may find that only single-use disposable options are available. An almost omnipresent example is bottled water. In many cases—like in offices, airports, restaurants, or theaters—it is very likely to be the only choice.⁶¹ Additionally, social position and identity can inscribe the choices realistically available to a person who seeks, as most of us do, to maintain their place within their social networks.⁶² And finally, try to tackle solid waste problems at the level of the consumer ignores the vast quantities of wastes that are produced upstream in the production process.⁶³

This literature on waste governance is, for the most part, situated within larger debates on governance. The body of work cited above is largely based in the Europe was triggered by a variety of directives issued by the E.U. and national governments which caused a great deal of upheaval in the provision of solid waste services, particularly in the U.K. Scholars watched as new institutions were formed, old institutions were challenged, and new ideas, technologies, and practices burst into what had been a relatively stable, even boring, field for generations. Within the discourse, there have been few attempts to theorize more broadly about how solid waste is governed.

⁶⁰ Gille, *From the Cult of Waste to the Trash Heap of History*.

⁶¹ Gay Hawkins, Emily Potter, and Kane Race, *Plastic Water: The Social and Material Life of Bottled Water* (Cambridge, Massachusetts: The MIT Press, 2015); Liboiron, “Against Awareness, For Scale.”

⁶² Gille, *From the Cult of Waste to the Trash Heap of History*; Juliet Schor, *Do Americans Shop Too Much?*, New Democracy Forum (Boston, MA: Beacon Press, 2000).

⁶³ Samantha MacBride, *Recycling Reconsidered: The Present Failure and Future Promise of Environmental Action in the United States* (Cambridge, MA and London, England: MIT Press, 2012); Max Liboiron, “Solutions to Waste and the Problem of Scalar Mismatches,” *Discard Studies*, February 10, 2014, <https://discardstudies.com/2014/02/10/solutions-to-waste-and-the-problem-of-scalar-mismatches/>; Michael F. Maniates, “Individualization: Plant a Tree, Buy a Bike, Save the World?,” *Global Environmental Politics* 1, no. 3 (August 2001): 31–52, doi:10.1162/152638001316881395.

Davies' work on the geographies of garbage governance, referenced above, develops a "spatialized governmentality" approach to analyze the governance of waste.⁶⁴ The approach, grounded in a Foucauldian understanding of governmentality, allows for a deeper analysis of the *how* and *why* of institutional change and policy change than traditional governance frameworks,⁶⁵ which have tended in the waste sector, to be more descriptive. Bulkeley, Watson, and Hudson, working in this same tradition, developed the "modes of governing" framework to identify and interpret the relationships among the many actors and objects that constitute a municipal solid waste management system. Modes of governing are "defined in terms of [their] objectives, and [their] components include: a governmental rationality, and associated objectives and programmes (policies); governing agencies; institutional relations between the agencies involved; technologies of governing; and the entities, in human and non-human terms, which are governed."⁶⁶

Bulkeley et al., identify four modes through empirical research in the U.K. context—the disposal mode, the diversion mode, the eco-efficiency mode, and the waste-as-resource mode. The disposal mode of governing refers to systems that depend primarily on landfilling and incineration with only limited alternatives. According to the logic of the waste hierarchy, this is unsustainable. Although landfilling in some U.S. contexts remains low cost, and control technologies have improved the environmental performance of both landfilling and waste-to-energy incineration, disposal-dominant material management systems depend on the continued extraction and processing of virgin materials. This one-way material flow is fundamentally unsustainable as natural resource reserves are depleted; it threatens economic and ecological security.⁶⁷

⁶⁴ Davies, *The Geographies of Garbage Governance*; Davies, "Incineration Politics and the Geographies of Waste Governance: A Burning Issue for Ireland?"

⁶⁵ Bulkeley, Watson, and Hudson, "Modes of Governing Municipal Waste."

⁶⁶ *Ibid.*, 2739.

⁶⁷ Robert Costanza and Herman E. Daly, "Ecological Economics Toward an Ecological Economics," *Ecological Modelling* 38, no. 1 (September 1, 1987): 1–7, doi:10.1016/0304-3800(87)90041-X; Herman E. Daly, "Reconciling the

The diversion mode prioritizes recycling and composting, and may be understood as weak sustainability. It is a market-based solution that does not threaten the overall economic order of consumption and waste practices,⁶⁸ but nevertheless has the potential to reduce demand for virgin materials (recycling) and restore organic nutrients to soil (composting). The eco-efficiency mode prioritizes the reduction of the negative impacts of waste and waste management through more dramatic and transformative action including an emphasis on material reuse instead of more energy intensive recycling. Unlike the diversion rationalities, eco-efficiency rationalities prioritize waste reduction on the front end, not just end-of-pipe treatments. Finally, the waste-as-resource mode aims to derive social and environmental benefit by entirely reframing the projects of waste-making and waste management. Waste-as-resource rationalities do not simply aim to capture economic value in materials through recycling, however, but to redefine waste management as process of social and environmental stewardship. This could include, for example, the consideration of good, well-compensated jobs generated through the repurposing of goods or reprocessing of materials, as well as the ecological benefits from reducing the extraction of virgin materials, reduced disposal, the return of nutrients to soil, and reduced transport of waste and virgin materials. The eco-efficiency and waste-as-resource modes can be understood as “strong sustainability;” more transformative, but more difficult to achieve.⁶⁹

In the U.S. context, the modes-of-governing framework has recently been adopted to examine how the private sector is able to more successfully steer program implementation than state policy, and

Economics of Social Equity and Environmental Sustainability,” *Population and the Environment* 24, no. 1 (September 2002).

⁶⁸ D. C. Gibbs, J. Longhurst, and C. Braithwaite, “‘Struggling with Sustainability’: Weak and Strong Interpretations of Sustainable Development within Local Authority Policy,” *Environment and Planning A* 30, no. 8 (August 1, 1998): 1351–65, doi:10.1068/a301351.

⁶⁹ Ibid.

to explore the barriers to transitioning between modes at the municipal level.⁷⁰ In the U.K. context, the modes framework has become a shorthand for describing policy direction. Scholars working in waste-related subjects have used the framework to describe how recent policy initiatives have shifted the U.K. waste sector from a disposal to a diversion mode.⁷¹

Neither the modes framework, nor most of the other work that explicitly takes on waste governance and policy in the UK and US contexts takes on the social construction of waste or unpacks the ways that policies, programs, and personal practices define waste as material or as process as central part of analysis. A growing body of work, much of it neo-Marxist in orientation, has worked to unearth different conceptions of ‘value’ through the exploration of human interactions with wastes.⁷² This approach has included analysis of the ways that people, through their physical contact with waste, have been categorized as wastes themselves,⁷³ and how the waste

⁷⁰ Howell, “‘Modes of Governing’ and Solid Waste Management in Maui, Hawaii, USA”; Lily Baum Pollans, “Trapped in the Disposal Mode: ‘Modes of Governing’ and Barriers to Transitioning to Sustainable Waste Management” (Submitted for publication, November 2016), on file with author.

⁷¹ Tudor et al., “Challenges Facing the Sustainable Consumption and Waste Management Agendas: Perspectives on U.K. Households”; Matt Watson and Angela Meah, “Food, Waste and Safety: Negotiating Conflicting Social Anxieties into the Practices of Domestic Provisioning,” *The Sociological Review* 60 (December 1, 2012): 102–20, doi:10.1111/1467-954X.12040.

⁷² Stephen Horton, “Rethinking Recycling: The Politics of the Waste Crisis,” *Capitalism Nature Socialism* 6, no. 1 (March 1, 1995): 1–19, doi:10.1080/10455759509358618; Stephen Horton, “Value, Waste and the Built Environment: A Marxian Analysis,” *Capitalism Nature Socialism* 8, no. 2 (June 1, 1997): 127–39, doi:10.1080/10455759709358740; Ruth Lane, “The Waste Commons in an Emerging Resource Recovery Waste Regime: Contesting Property and Value in Melbourne’s Hard Rubbish Collections,” *Geographical Research* 49, no. 4 (November 1, 2011): 395–407, doi:10.1111/j.1745-5871.2011.00704.x; Peter Roberts, “Wealth from Waste: Local and Regional Economic Development and the Environment,” *Geographical Journal* 170, no. 2 (June 1, 2004): 126–34, doi:10.1111/j.0016-7398.2004.00114.x; Catherine Alexander and Joshua Reno, eds., *Economies of Recycling: The Global Transformation of Materials, Values and Social Relations* (London and New York: Zed Books, 2012); Zsuzsa Gille, “Actor Networks, Modes of Production, and Waste Regimes: Reassembling the Macro-Social,” *Environment and Planning A* 42, no. 5 (May 1, 2010): 1049–64, doi:10.1068/a42122; Mike Crang et al., “Rethinking Governance and Value in Commodity Chains through Global Recycling Networks,” *Transactions of the Institute of British Geographers* 38, no. 1 (January 1, 2013): 12–24, doi:10.1111/j.1475-5661.2012.00515.x.

⁷³ Carl Zimring, “Dirty Work: How Hygiene and Xenophobia Marginalized the American Waste Trades, 1870–1930,” *Environmental History* 9, no. 1 (January 1, 2004): 80–101, doi:10.2307/3985946; Robin Nagle, *Picking Up: On the Streets and Behind the Trucks with the Sanitation Workers of New York City*, 1st Edition, 1st Printing (New York: Farrar, Straus and Giroux, 2013); Katherine Marie Parizeau, “Urban Dirty Work: Labour Strategies, Environmental Health, and Coping among Informal Recyclers in Buenos Aires, Argentina” (Doctoral Thesis, University of Toronto, 2011).

of lives is aligned with macro, societal patterns of wastefulness.⁷⁴ On the inverse side, scholars of hygiene have explored the moral content of narratives of cleanliness have legitimized dichotomies between nature and culture, the lumping together of people and wastes, racist regimes, and environmental injustices.⁷⁵ From this critical tradition, new theories of waste have emerged that denaturalize technocratic ideas of waste embedded in most public policy, as well as social theories of waste as ‘other,’ and instead articulate processes of waste making, waste defining, and waste management as socially embedded and highly mutable. For instance Joshua Reno suggests that rather than being an anomalous product that signifies decay, or even death, engaging with forms of waste in their biological capacities allows us to reconceive of waste matter as signal of ongoing processes of life.⁷⁶

Waste Regimes

Drawing on waste as matter with concrete characteristics in addition to socially assigned meanings is also the starting point for Zsuzsa Gille’s theory of waste regimes, which presents a significant theory of waste in society. Other authors had previously used the term “waste regime” in a more general way, building on the concept of technical or socio-technical regimes that are self-reinforcing and relatively stable. The usage typically referred to national level policy regimes directing municipal waste management.⁷⁷ Gille’s theory of waste regimes, however, is built on Oran Young’s theory of

⁷⁴ Kevin Lynch, *Wasting Away*, ed. Michael Southworth (San Francisco: Sierra Club Books, 1990).

⁷⁵ Angela Gugliotta, “Class, Gender, and Coal Smoke: Gender Ideology and Environmental Injustice in Pittsburgh, 1868-1914,” *Environmental History* 5, no. 2 (2000): 165–93, doi:10.2307/3985634; Carl A. Zimring, *Clean and White: A History of Environmental Racism in the United States* (New York: NYU Press, 2016); Suellen Hoy, *Chasing Dirt: The American Pursuit of Cleanliness*, Reprint edition (New York: Oxford University Press, 1996).

⁷⁶ Joshua Ozias Reno, “Toward a New Theory of Waste: From ‘Matter out of Place’ to Signs of Life,” *Theory, Culture & Society* 31, no. 6 (November 1, 2014): 3–27, doi:10.1177/0263276413500999.

⁷⁷ See for example: Nicolas Buclet and Olivier Godard, “The Evolution of Municipal Waste Management in Europe: How Different Are National Regimes?,” *Journal of Environmental Policy and Planning* 3, no. 4 (October 1, 2001): 303–17, doi:10.1002/jep.91; Wim Hafkamp, “Comparison of National Solid Waste Regimes in Trajectories of Change,” in *Municipal Waste Management in Europe*, ed. Nicolas Buclet, Environment & Management 11 (Springer Netherlands, 2002), 7–26, doi:10.1007/978-94-015-9910-8_2.

“resource regimes,” or the collection of social institutions that determine which natural resources have value, how that value is allocated, and how conflicts should be resolved.⁷⁸

In Gille’s formulation, waste regimes describe key features of how a society generates, defines, and manages its wastes:

What appears to be unique in different time periods and different societies are the types of wastes produced (their material composition); the key sources of waste production (for example, unutilized surplus of insufficient inputs) and the dominant mode of waste circulation and metamorphosis; the socially and culturally determined ways of misperceiving waste’s materiality; the ways in which, as a result, waste tends to “bite back”; the cultural, political, and moral inclination to resolve waste’s liminality (inscribed negativity or positivity); and, finally, key struggles around waste (in the sphere of production or in the sphere of distribution).⁷⁹

In short, waste regimes “differ from each other according to the production, representation, and politics of waste.”⁸⁰ To build this theory, Gille identifies three aspects of wastes: spatiality, materiality, and temporality. In regards to spatiality, Gille argues that classifying what is waste from what is not waste is a fundamental act, that usually also implies separating waste from what is not waste. This can happen at the scale of the household (i.e. putting something in the waste bin) or at the scale of the waste system, as waste objects move from our space to away space. Thus, the act of classifying waste is also, inevitably, an act of displacement.

The second key characteristic is materiality. Gille notes that much social theory, similarly to the governance theory discussed above, has tended to avoid dealing with the thingness of waste, instead understanding it only as a social or economic process. This is not just restricted to social theorists, but also to societies themselves, and it results in the tendency to misunderstand,

⁷⁸ Oran R. Young, *Resource Regimes: Natural Resources and Social Institutions* (University of California Press, 1982).

⁷⁹ Gille, *From the Cult of Waste to the Trash Heap of History*, 34.

⁸⁰ Ibid.

mischaracterize, and even “misplace” waste materials. Waste need to be understood not *just* as social processes, but as a material-social hybrid. Stuff, after all, does rust, rot, evaporate, and otherwise decay; this needs to be understood in concert with social determinations of usefulness and value.

Finally, Gille introduces the idea of temporality. Waste exists not only in waste, but in time, implying constant processes of metamorphosis. Building on Joel Tarr’s observation that U.S. policies to prevent pollution often served to displace the pollution, or simply put it into a different form,⁸¹ Gille argues that a wasted thing is constantly begetting and becoming other kinds of waste. Wasted labor becomes surplus material; surplus material can quickly become garbage.

Gille uses the waste regime theory to explore shifts in waste representation, generation, and practices in Hungary as it transitioned from what she calls “metallic Socialism” towards a more open economy with privatized means of production. Through this empirical analysis she demonstrates that waste regimes are dynamic and that they allow observers to start to identify “resistances to seemingly ubiquitous relations of production.”⁸²

What is the relationship of a waste regime to a waste management system? Waste systems are one small piece in a waste regime. The waste systems of interest to this study are comprised of the technologies, institutions, and actors who manage just one category of waste—municipal solid waste. Municipal solid waste systems operate occupy a particular temporal and spatial territory within a waste regime: they are responsible for the collection and disposal of objects and substances

⁸¹ Tarr, *The Search for the Ultimate Sink: Urban Pollution in Historical Perspective*.

⁸² Gille, *From the Cult of Waste to the Trash Heap of History*, 35.

already classified as waste by households and businesses. The boundaries at the edge of MSWM systems are not crystal clear, however. As Gille and others have observed, it is not possible to understand consumption without waste, and vice versa.⁸³ In their choice of strategies, technologies, and regulations, waste systems can challenge or reinforce fundamental assumptions of the waste regime.

MSWM systems, which can be described as socio-technical regimes, are more frequently characterized by path dependence than the dynamism Gille described in Hungary as it transitioned from Socialism to Capitalism. A great deal of the governance literature described above, in fact, seeks to understand why policy so frequently fails to alter management practice on the ground; though the literature tends not to engage directly with path dependence literature in the fields of STS or sustainability transitions, the phenomenon of socio-technical lock-in is pervasive.

By drawing together the key observations embedded in waste regime theory with the observations from the waste governance, I offer the concept of wasteways to describe the manner in which municipal waste systems get stuck within or resist the macro-waste regimes in which they are situated.

Between Governance and Regimes: Wasteways

Critical discard studies and Gille's waste regime theory highlight the significance of how waste is generated, defined and represented in societies. At the scale of a municipal waste system, in U.S.

⁸³ Gille, "Actor Networks, Modes of Production, and Waste Regimes"; Tudor et al., "Challenges Facing the Sustainable Consumption and Waste Management Agendas: Perspectives on U.K. Households"; Karin M. Ekström, ed., *Waste Management and Sustainable Consumption: Reflections on Consumer Waste*, 1 edition (London ; New York: Routledge, 2014); Crang et al., "Rethinking Governance and Value in Commodity Chains through Global Recycling Networks"; Gregson, Metcalfe, and Crewe, "Moving Things along"; Bulkeley and Gregson, "Crossing the Threshold."

usually the county or the city, the question of waste generation becomes too big. While the composition of waste streams in different cities may vary due to specialization of the local economy, the average wealth of residents, climate and other characteristics, the broader economic forces that determine waste generation are not usually controlled at the local level. But in the U.S. where federal and state governments offer little in terms of waste policy guidance, the questions of representation and definition are actively shaped by local actors. Thus, I contend that how wasteways function is largely a product of the public problem of waste, and waste itself, is defined by the people responsible for managing it.

The waste governance literature tells us that participation and expertise matter a great deal in terms how policy visions for waste management take shape and are implemented. It follows that the fundamental question of how the public problem of waste is defined will also be determined by the extent to which the process of problem definition itself is subject to a broad and participatory discourse. To flesh out these hypotheses, I will first explore the broader literature around problem definition and expertise in policy and planning, and will then return to the question of wasteways.

What is a public problem, how are they defined, and who gets to decide?

Einstein is famously credited with saying that “we can’t solve our problems with the same thinking we used when we created them.” Or sometimes, “problems cannot be solved at the same level of awareness that created them.” Whether or not he actually said this, or something like it, a variation of this idea serves as the starting point for much of the literature about socio-technical lock-in.⁸⁴

The quotes capture the fundamental tension embedded in the process of problem-solving: solving a

⁸⁴ See for example: Gregory C Unruh, “Understanding Carbon Lock-In,” *Energy Policy* 28, no. 12 (October 1, 2000): 817–30, doi:10.1016/S0301-4215(00)00070-7.

problem may actually rest on redefining the problem in new terms. As Rittel and Webber observed in 1973

The search for scientific bases for confronting problems of social policy is bound to fail, because of the nature of these problems. They are 'wicked' problems, whereas science has developed to deal with 'tame' problems.⁸⁵

Rittel and Webber go on to argue that, given the complex, intractable nature of planning problem,

To find the problem is thus the same thing as finding the solution. The problem can't be defined until the solution has been found. The formulation of a wicked problem is the problem! The process of formulating the problem and of conceiving of a solution (or re-solution) are identical, since every specification of the problem is a specification of the direction in which a treatment is considered.⁸⁶

Setting the terms of the problem, then, is a, if not *the*, consequential act in the policy-making process. Defining a problem means deciding what is wrong, and what should be, and identifying the corrective path between the two. But how does this process happen, and perhaps more importantly, who participates?

Two major strains of literature address problem definition in the context of social or public problems, though they only partially answer these questions. One sits within policy sciences and focuses on the role of problem definition in the policy-making process; it focuses on the elements of problem definitions and the effect of definitions on policy-making and policy outcomes. The emphasis, for the most part, lies with policy-making elites, and cases tend to reside at the federal or state policy-making level. A second, almost completely independent discourse surrounds social problems. This discourse, predominantly among sociologists, has focused on developing a coherent theory of social problems that is distinct from earlier theories of deviance or social disorganization.

⁸⁵ Horst W. J. Rittel and Melvin M. Webber, "Dilemmas in a General Theory of Planning," *Policy Sciences* 4 (1973): 155–69.

⁸⁶ *Ibid.*, 161.

This literature emphasizes the ways in which particular issues become widely recognized as problems in need of remediation. This discourse emphasizes claims-making activities, the role of individual actors and groups, and the media in socio-political context.

At their core, both bodies of literature share a fundamental understanding of a public, or a social, problem. Both bodies of work reject the modernist, rational view of problems that have dominated in policy analysis, and some degree, planning, that a ‘problem’ is a quantifiable, objective condition.⁸⁷ Rather, recognizing the constitutive role of values in determining when and how the government will mobilize resources to intervene to alter a condition, both the recent sociological and political traditions view “problems” as social constructs. Thus, while most researchers working in this field recognize that underlying conditions are real, and often terribly harmful, the dominant view is that public problem definition is not *only* the identification of objective conditions. Rather a problem definition is process of social construction that places objective conditions in a normative and political context; it draws attention to certain issues, and makes the case for public intervention in some capacity.

Whether an issue is considered a problem or not in any given society can depend on a variety of factors. Researchers have shown, for instance that framing events, media coverage, and national and institutional culture can all have impacts on whether conditions are viewed by policy-makers and the general public as a problem in need of a solution.⁸⁸ The occurrence of a sudden crisis or a

⁸⁷ Brian W. Hogwood and Lewis A. Gunn, *Policy Analysis for the Real World* (Oxford: Oxford University Press, 1984); Robert Merton and Robert Nisbet, *Contemporary Social Problems: An Introduction to the Sociology of Deviant Behavior and Social Disorganization* (New York: Harcourt, Brace and World, 1961).

⁸⁸ Rachel Best, “Situation or Social Problem: The Influence of Events on Media Coverage of Homelessness,” *Social Problems* 57, no. 1 (February 1, 2010): 74–91, doi:10.1525/sp.2010.57.1.74; Nichole Fifer and Shannon K. Orr, “The Influence of Problem Definitions on Environmental Policy Change: A Comparative Study of the Yellowstone Wildfires,” *Policy Studies Journal* 41, no. 4 (2013): 637–54; Abigail C. Saguy, Kjerstin Gruys, and Shanna Gong, “Social

marked change in a well-monitored indicator have also been shown to help shift the perception of a condition or situation to the perception of a problem.⁸⁹ Problems that gain significant attention in some moments can fade into unfortunate conditions at other moments.⁹⁰ And, the problem status of conditions that are widely viewed as problematic, like climate change, for instance, can nevertheless remain contested through the strategic deployment of counter-facts, counter-experts, and a cooperative media oriented towards a balanced presentation of information.⁹¹

As the case of climate change makes abundantly clear, the shift from ‘condition’ to ‘problem’ is typically not an organic or unguided process. Nor, does an understanding of a problem necessarily emerge along side a new ontological phenomenon. Rather, problems can be coaxed into being by political leaders or social movements through careful political maneuvering, strategic media coverage, the marshaling of certain facts, the deployment of meaningful symbols, or weaving of compelling narratives. Public problems are defined and contested by actors working through the channels available to them in their socio-political contexts. As Deborah Stone argues, “problem definition is the active manipulation of *images* of conditions by competing political actors.”⁹² John Kingdon calls the people who coordinate this process policy entrepreneurs. Policy entrepreneurs are policy-making elites, experts already embedded in the policy-making process, who use a variety

Problem Construction and National Context: News Reporting on ‘Overweight’ and ‘Obesity’ in the United States and France,” *Social Problems* 57, no. 4 (November 1, 2010): 586–610, doi:10.1525/sp.2010.57.4.586.

⁸⁹ John D. Kingdon, *Agendas, Alternatives, and Public Policies*, Second Edition (New York: Harper Collins College Publishers, 1995), 93; Travis Wagner, “Reframing Garbage: Solid Waste Policy Formulation in Nova Scotia,” *Canadian Public Policy / Analyse de Politiques* 33, no. 4 (December 1, 2007): 459–75.

⁹⁰ Helen Z. Lopata, “Social Construction of Social Problems over Time,” *Social Problems* 31, no. 3 (February 1984): 249–72; Edward Seidman and Julian Rappaport, “Framing the Issues,” in *Redefining Social Problems*, ed. Edward Seidman and Julian Rappaport (New York City: Springer Science and Business Media, 1986), 1–8.

⁹¹ Maxwell T Boykoff, “From Convergence to Contention: United States Mass Media Representations of Anthropogenic Climate Change Science,” *Transactions of the Institute of British Geographers* 32, no. 4 (October 1, 2007): 477–89, doi:10.1111/j.1475-5661.2007.00270.x; Maxwell T Boykoff and Jules M Boykoff, “Balance as Bias: Global Warming and the US Prestige Press,” *Global Environmental Change* 14, no. 2 (July 2004): 125–36, doi:10.1016/j.gloenvcha.2003.10.001.

⁹² “Causal Stories and the Formation of Policy Agendas,” *Political Science Quarterly (Academy of Political Science)* 104, no. 2 (Summer 1989): 299 emphasis original.

of tools to influence shift the perception of a condition to one of a problem, and, through their carefully crafted definition, also supply the preferred policy solution.⁹³

While the policy sciences literature tends to emphasize the role of policy elites, they are not the only actors who can undertake the role of calling attention to a public problem. Individual actors and non-governmental organizations are constantly working to create new problem narratives, or draw attention to issues that they consider problematic. This process, even when undertaken by powerful policy elites, is usually contested hotly because the stakes are high; whoever controls the problem definition, also controls the policy outcomes.⁹⁴

Given the degree of potential conflict, and the multitude of potential problems competing in a plural society, why is it that some problems make it onto policy agendas while others languish? Researchers have identified common characteristics that help transform a “condition” to a “problem” in the public imagination and among policy makers. Further, researchers have observed elements of successful definitions that seek to explain why certain problem definitions win out in policy-making.

Regardless of the type of situation, a problem definition usually has certain characteristics that help it to be taken seriously as a public problem worthy of a policy response. Deborah Stone argues that “Conditions may come to be defined as problems through the strategic portrayal of causal stories.”⁹⁵ These causal stories are not random: they portray conditions as within the realm of

⁹³ *Agendas, Alternatives, and Public Policies*.

⁹⁴ Joseph R. Gusfield, *The Culture of Public Problems: Drinking-Driving and the Symbolic Order* (Chicago and London: University of Chicago Press, 1981); Kingdon, *Agendas, Alternatives, and Public Policies*; Janet A. Weiss, “The Powers of Problem Definition: The Case of Government Paperwork,” *Policy Sciences* 22, no. 2 (May 1989): 97–121, doi:10.1007/BF00141381.

⁹⁵ “Causal Stories and the Formation of Policy Agendas,” 299.

human control rather than as accidents or nature, and they link the problematic conditions to the specific actors or actions that caused them. Problem definitions encompass two types of responsibility: they not only point to the cause of the problem, but they also either imply or directly identify the parties responsible for the solution.⁹⁶ Further, successful definitions of problems demonstrate that a problem is systemic and widespread, rather than an individual failure.⁹⁷ It is not enough, though, to simply frame an issue as systemic and within human control. There must also be a path towards a solution. As Wildavsky has observed, “a difficulty is a problem only if something can be done about it.”⁹⁸ The potential solutions, in other words, are actually the framework of the problem definition.⁹⁹ Not only must a solution be implied by the problem definition, it must be a solution that the problem definers have the tools, skills, knowledge, and capacity to implement.¹⁰⁰

Once a problem is established in public debate, certain “success characteristics” can help it dominate in a competition among alternate definitions.¹⁰¹ In addition to having a champion or a strong problem entrepreneur, researchers have found that the feasibility of proposed solutions, consensus among proponents, and compatibility with competing problem frames also predict success.¹⁰² The ability of problem entrepreneurs to opportunistically adapt problem definitions to changing contexts,¹⁰³ to marshal data to highlight certain aspects of a conditions and hide others,¹⁰⁴

⁹⁶ Gusfield, *The Culture of Public Problems: Drinking-Driving and the Symbolic Order*.

⁹⁷ Ibid.; Seidman and Rappaport, “Framing the Issues.”

⁹⁸ *Speaking Truth to Power*, Reprint edition (New Brunswick, USA: Transaction Publishers, 1987), 42.

⁹⁹ Kingdon, *Agendas, Alternatives, and Public Policies*, 109; Rittel and Webber, “Dilemmas in a General Theory of Planning.”

¹⁰⁰ Lisa Bardwell, “Problem-Framing: A Perspective on Environmental Problem Framing,” *Environmental Management* 15, no. 5 (1991): 603–12.

¹⁰¹ David J. Houston and Lilliard E. Richardson, “The Politics of Air Bag Safety: A Competition Among Problem Definitions,” *Policy Studies Journal* 28, no. 3 (2000): 494.

¹⁰² Houston and Richardson, “The Politics of Air Bag Safety: A Competition Among Problem Definitions.”

¹⁰³ Magalie Bourblanc, “Framing Environmental Problems: Problem Entrepreneurs and the Issue of Water Pollution from Agriculture in Brittany 1970-2005,” *Journal of Environmental Policy and Planning* 16, no. 1 (2014): 21–35.

¹⁰⁴ Gusfield, *The Culture of Public Problems: Drinking-Driving and the Symbolic Order*; Houston and Richardson, “The Politics of Air Bag Safety: A Competition Among Problem Definitions.”

and to depict the problem in symbolic terms that resonate with popular values also increase the chances that certain problem definitions will win out.¹⁰⁵

The debates around problem definition take place in a variety of venues. Some debates are technical and embedded in formal policy making processes, such as in the halls of congress, or among elite policy makers more generally. Other debates are highly public and involve multiple interest groups that range far beyond policy elites. Often debates rage in the media, with different groups and actors strategically deploying different problem narratives in their effort to win wide-spread popular support for a particular problem definition and thus policy direction.

Given the degree of subjectivity, complexity, and power embedded in the problem definition process, it is critical to regard problem definition as much more significant than simply the start of a policy cycle. Successful problem definitions carry within them a clear path towards a solution. In this sense, a problem definition is both the start, and the conclusion of a policy cycle. Further, once a problem definition is embedded in new policy, it changes the context for future problem definitions and policy solutions; the process creates a kind of momentum, analogous to infrastructure lock in, propelling both new problem definitions and new policy.¹⁰⁶ In other words, problem definitions should be understood not only as necessary pre-conditions for policy making, but also as key outcomes in public and policy debates. The problem definition process is, fundamentally, a key arena for expressing power and for influencing consequential outcomes in the world.

¹⁰⁵ Gusfield, *The Culture of Public Problems: Drinking-Driving and the Symbolic Order*; David A. Rochefort and Roger W. Cobb, "Problem Definition, Agenda Access, and Policy Choice," *Policy Studies Journal* 21, no. 1 (Spring 1993): 56–71, doi:10.1111/1541-0072.ep11784506; Stone, "Causal Stories and the Formation of Policy Agendas."

¹⁰⁶ Weiss, "The Powers of Problem Definition."

While the problem framing literature makes the political nature of problem-definition abundantly clear, it has only obliquely addressed the issue of who gets to participate and in what capacities. The policy sciences literature tends to assume that policy elites are responsible for problem framing; the sociological literature views problem framing as a public, social contestation that often takes place in the media, but does not offer clear insights into why certain voices win out over others, or examine the mechanics by which some voices are viewed as legitimate and others not. The literature around expertise offers some critical insights into questions of legitimacy, knowledge, and the role of traditional outsiders in policy-making processes.

Politics of expertise and the gap in the problem framing

The concept of expertise is so deeply embedded in our culture it can be easy to take it for granted. It is valued by employers; it is demanded to inform all manner of public decisions; it is what we all strive for, and claim, in our occupations as academics. I am particularly interested here in the form of modern expertise grounded in the rational scientific method, the expertise marshaled and deployed, with ever-higher stakes, by public decision-makers in the wake of the two world wars. Urban and infrastructural planning processes in particular have been driven by this variety of expertise, in the form of highly technical procedures borrowed from military planning in the wake of World War II.¹⁰⁷ The use of policy analysis and comprehensive planning served to remove infrastructural development from the political realm by asking well-trained experts to assess a given set of options and justify decisions.¹⁰⁸ In these planning and policy arenas, expertise means

¹⁰⁷ Jennifer S. Light, *From Warfare to Welfare: Defense Intellectuals and Urban Problems in Cold War America* (Baltimore, Md.; London: Johns Hopkins University Press, 2005).

¹⁰⁸ Alan Black, "The Chicago Area Transportation Study: A Case Study of Rational Planning," *Journal of Planning Education and Research* 10, no. 1 (1990): 27–37; Scott, *Seeing like a State*.

knowing the world through universal, abstract truths that have been rigorously established and tested by the scientific method.

Despite highly public and political challenges to expert opinion, especially in hot button areas like women's health and climate change—and much more in the 2016 presidential election—this form of scientific and technocratic expertise remains the gold standard in public policy and decision-making processes. Politicians and citizens alike demand expert assessments of all manner of public problems; and “experts” now are everywhere, in every organization, on every news program, ready to explain, interpret, enlighten.

This mode of expertise, however, has been deeply and thoroughly challenged. Kuhn challenged the sacred premise that science was neutral, incremental, and objective.¹⁰⁹ Not only is scientific experimentation and publication occurring within a culture driven by complex socially negotiated norms,¹¹⁰ the whole enterprise of science sits in a political world; judgments about what is valuable to study, what constitutes an interesting finding, what research will be funded, and what findings will be incorporated into policy-making all take place in a political setting both within and outside the world of science.¹¹¹ Jasanoff has called this social construction of scientific practice and knowledge creation civic epistemology, and has demonstrated how the scientific enterprise differs fundamentally in different national contexts.¹¹² More generally, many have critiqued the reductionist nature of scientific or expert approach that seeks to simplify complex social and

¹⁰⁹ *The Structure of Scientific Revolutions*, 2nd Edition (Chicago: University of Chicago Press, 1970).

¹¹⁰ *Ibid.*

¹¹¹ David Demeritt, “The Construction of Global Warming and the Politics of Science,” *Annals of the Association of American Geographers* 91, no. 2 (June 2001): 307; Sheila Jasanoff, *Designs on Nature: Science and Democracy in Europe and the United States* (Princeton, N.J.: Princeton University Press, 2005).

¹¹² *Designs on Nature*.

political processes down to a series of measurable variables that can be modeled, obscuring social and political relations, and critically, power relations.¹¹³

Expert practitioners, particularly in the realms of planning and policy analysis are constantly making normative judgments about what to draw attention to and what to emphasize based on their own visions and their read of the communities that they serve.¹¹⁴ The objectivity of scientific and technical knowledge has also been destabilized by dramatic and widely publicized disasters like Three Mile Island and Chernobyl,¹¹⁵ and more recently after the levee failure in New Orleans during hurricane Katrina.¹¹⁶ As has been observed generally in risk studies, and specifically in discard studies, not only are experts operating in highly political world, they never have perfect information, and thus substitute judgment for facts, or selectively use the information they have. The use of expertise in political decision-making processes highlights certain information that is deemed relevant, and obscures other information that is too messy, too specific, or otherwise unfit for modeling. This has been particularly critiqued within studies of risk; experts and expert institutions are able to obscure responsibility for catastrophes, casting them as accidents, or obscure the nature of risk altogether.¹¹⁷

¹¹³ Demeritt, "The Construction of Global Warming and the Politics of Science"; Jane Jacobs, *The Death and Life of Great American Cities* (New York: Random House, 1961); Charles E. Lindblom, "The Science of 'Muddling Through,'" *Public Administration Review* 19 (April 1959): 79–88.

¹¹⁴ John Forester, "Anticipating Implementation: Normative Practices in Planning and Policy Analysis," in *Confronting Values in Policy Analysis: The Politics of Criteria*, ed. John Forester and Frank Fischer (Newbury Park: SAGE Publications, 1987), 153–73.

¹¹⁵ Peter Weingart, "Scientific Expertise and Political Accountability: Paradoxes of Science in Politics," *Science and Public Policy* 26, no. 3 (June 1, 1999): 151–61, doi:10.3152/147154399781782437.

¹¹⁶ Marla Nelson, Renia Ehrenfeucht, and Shirley Laska, "Planning, Plans, and People: Professional Expertise, Local Knowledge, and Governmental Action in Post-Hurricane Katrina New Orleans," *Cityscape* 9, no. 3 (2007): 23–52.

¹¹⁷ Ulrich Beck, *Risk Society: Towards a New Modernity*, trans. Mark Ritter (London: Sage Publications, 1992); Brian Wynne, "May the Sheep Safely Graze? A Reflexive View of the Expert-Lay Knowledge Divide," in *Risk, Environment, and Modernity: Towards a New Ecology*, ed. Scott Lash, Bronislaw Szerszynski, and Brian Wynne (London: SAGE Publications, 1996), 44–83; Petts, "Barriers to Participation and Deliberation in Risk Decisions"; Petts, "Incineration Risk Perceptions and Public Concern"; Helena Mateus Jeronimo and Jose Luis Garcia, "Risks, Alternative Knowledge Strategies and Democratic Legitimacy: The Conflict over Co-Incineration of Hazardous Industrial Waste in Portugal," *Journal of Risk Research* 14, no. 8 (September 2011): 951–67, doi:10.1080/13669877.2011.571783; Susan J. Elliott and

Experts and expert institutions have been able to write the dominant narratives of catastrophes and risk because expertise is power.¹¹⁸ Expert control over decision-making processes has functioned to exclude individuals and organizations that lack the knowledge, skills, capacity, or language to converse in the language of science.¹¹⁹ In some cases, politicians and decision-makers bring in experts to justify decisions already made and quell public discomfort,¹²⁰ reinforcing political power with the power of respected and supposedly value-neutral expertise.

In some cases, expertise can be power in and of itself. But in situations where power is distributed unequally, expertise can magnify existing power dynamics. For instance, powerful industries have repeatedly exploited scientific uncertainty to combat challenges from competitive or critical interests. In the cases of lead, tobacco, DDT, BPA and many others, powerful corporate interests used their political heft and deep pockets to leverage scientific uncertainty to continue the use and sale of harmful products.¹²¹ The chemical industry is a prime example. Even after many well publicized public health and environmental catastrophes, the chemical industry is able to challenge

Jessica McClure, “‘There’s Just Hope That No One’s Health Is at Risk’: Residents’ Reappraisal of a Landfill Siting,” *Journal of Environmental Planning and Management* 52, no. 2 (2009): 237–55, doi:10.1080/09640560802666578.

¹¹⁸ Dorothy Nelkin, “The Political Impact of Technical Expertise,” *Social Studies of Science* 5, no. 1 (1975): 35–54.

¹¹⁹ Michael S. Carolan, “Science, Expertise and the Democratization of the Decision-Making Process,” *Society & Natural Resources* 19, no. 7 (2008): 661–68; Jason Corburn, “Community Knowledge in Environmental Health Science: Co-Producing Policy Expertise,” *Environmental Science & Policy* 10, no. 2 (April 2007): 150–61; Brent Taylor and Rob C. de Loë, “Conceptualizations of Local Knowledge in Collaborative Environmental Governance,” *Geoforum*, Themed issue: Spatialities of Ageing, 43, no. 6 (November 2012): 1207–17, doi:10.1016/j.geoforum.2012.03.007.

¹²⁰ Jeronimo and Garcia, “Risks, Alternative Knowledge Strategies and Democratic Legitimacy.”

¹²¹ Devra Lee Davis, *When Smoke Ran like Water: Tales of Environmental Deception and the Battle against Pollution* (New York, NY: Basic Books, 2002); Naomi Oreskes and Erik M. Conway, *Merchants of Doubt: How a Handful of Scientists Obscured the Truth on Issues from Tobacco Smoke to Global Warming*, 1st U.S. ed (New York: Bloomsbury Press, 2010); Theo Colborn, Dianne Dumanoski, and John Peterson Myers, *Our Stolen Future: Are We Threatening Our Fertility, Intelligence, and Survival? A Scientific Detective Story* (New York: Dutton, 1996).

the existence of problems by hiding behind scientific uncertainty and a political process designed to accommodate them.¹²²

While experts and the political elite often speak the same language¹²³ and can thus work together to produce “social facts”¹²⁴ most observers witness a gulf between experts, technocrats and bureaucrats and everyone else. Participatory models of planning and policy-making assume that the general public has something valuable to offer problem-solving enterprises. As a counterpoint to expertise or technocratic knowledge, this “something valuable” has variously been called lay knowledge, experiential knowledge, local knowledge,¹²⁵ ordinary knowledge,¹²⁶ sustainable knowledge,¹²⁷ citizen science,¹²⁸ specialist knowledge,¹²⁹ public knowledge,¹³⁰ and tacit knowledge,¹³¹ to highlight just a few.

In contrast to the rational, universal, abstract, and technically sophisticated knowledge of experts, local knowledge is contextual and specific. It emerges from personal experience, and grounded

¹²² Nathaniel Rich, “The Lawyer Who Became DuPont’s Worst Nightmare,” *The New York Times*, January 6, 2016, <http://www.nytimes.com/2016/01/10/magazine/the-lawyer-who-became-duponts-worst-nightmare.html>.

¹²³ Jurian Edelenbos, Arwin van Buuren, and Nienke van Schie, “Co-Producing Knowledge: Joint Knowledge Production between Experts, Bureaucrats and Stakeholders in Dutch Water Management Projects,” *Environmental Science & Policy* 14, no. 6 (October 2011): 675–84.

¹²⁴ Gusfield, *The Culture of Public Problems: Drinking-Driving and the Symbolic Order*.

¹²⁵ Clifford Geertz, *Local Knowledge: Further Essays in Interpretive Anthropology* (New York: Basic Books, 1983).

¹²⁶ Charles Edward Lindblom and David K. Cohen, *Usable Knowledge: Social Science and Social Problem Solving* (New Haven: Yale University Press, 1979).

¹²⁷ Jonathan Murdoch and Judy Clark, “Sustainable Knowledge,” *Geoforum* 25, no. 2 (May 1, 1994): 115–32.

¹²⁸ Alan Irwin, *Citizen Science: A Study of People, Expertise and Sustainable Development* (London and New York: Routledge, 1995).

¹²⁹ Brian Wynne, “Misunderstood Misunderstandings: Social Identities and Public Uptake of Science,” in *Misunderstanding Science? The Public Reconstruction of Science and Technology*, ed. Brian Wynne and Alan Irwin (Cambridge: Cambridge University Press, 1996), 19–46.

¹³⁰ Carolan, “Science, Expertise and the Democratization of the Decision-Making Process”; Sheila Jasanoff, “Public Knowledge, Private Fears,” *Social Studies of Science* 27, no. 2 (1997): 350–55.

¹³¹ Olivier Boiral, “Tacit Knowledge and Environmental Management,” *Long Range Planning* 35 (2002): 291–317.

stories heard and witnessed over lifetimes.¹³² It is socially and physically embedded in a particular place,¹³³ community, or set of practices.¹³⁴ Local knowledge is fundamentally different from expert knowledge because it is negotiated in everyday life. An understanding of pollution, for example, “...is not defined, described, and understood in a discrete way: rather, it is intermingled with, indeed often embedded within, other important social issues.”¹³⁵ In terms of waste, households and communities determine what is useful and thus what is value through processes that are almost invisible to policy makers.¹³⁶

The wildly different epistemologies of lay and expert knowledge create a foundation for misunderstanding and distrust. Experts and laypeople do not share common processes for establishing the legitimacy of knowledge, or anointing particular individuals as credible. But expertise dominates in decision-making processes. Empirical research has demonstrated that experts continue to regard other forms of knowledge as irrelevant, even in the context of highly localized problems.¹³⁷ Innes and Booher¹³⁸ refer to the reversion to technocratic, expert knowledge as “epistemological anxiety.” Even when alternative visions, knowledges, and skills are assembled

¹³² Jason Corburn, *Street Science: Community Knowledge and Environmental Health Justice*, Urban and Industrial Environments (Cambridge, Mass: MIT Press, 2005); Taylor and de Loë, “Conceptualizations of Local Knowledge in Collaborative Environmental Governance”; Sylvia N. Tesh, “Citizen Experts in Environmental Risk,” *Policy Sciences* 32 (1999): 39–58.

¹³³ Taylor and de Loë, “Conceptualizations of Local Knowledge in Collaborative Environmental Governance.”

¹³⁴ Jason Corburn, “Bringing Local Knowledge into Environmental Decision Making: Improving Urban Planning for Communities at Risk,” *Journal of Planning Education and Research* 22, no. 4 (2003): 420–33.

¹³⁵ Judith Petts and Catherine Brooks, “Expert Conceptualisations of the Role of Lay Knowledge in Environmental Decisionmaking: Challenges for Deliberative Democracy,” *Environment and Planning A* 38, no. 6 (June 1, 2006): 1047, doi:10.1068/a37373.

¹³⁶ Bulkeley and Gregson, “Crossing the Threshold”; Gregson, *Living with Things*.

¹³⁷ Davies, “Waste Wars: Public Attitudes and the Politics of Place in Waste Management Strategies”; Edelenbos, van Buuren, and van Schie, “Co-Producing Knowledge”; Camille Limoges, “Expert Knowledge and Decision-Making in Controversy Contexts,” *Public Understanding of Science* 2, no. 4 (October 1, 1993): 417–26, doi:10.1088/0963-6625/2/4/009; Petts, “The Public—expert Interface in Local Waste Management Decisions”; Petts, “Barriers to Participation and Deliberation in Risk Decisions”; Petts and Brooks, “Expert Conceptualisations of the Role of Lay Knowledge in Environmental Decisionmaking”; Wynne, “Misunderstood Misunderstandings: Social Identities and Public Uptake of Science.”

¹³⁸ *Planning with Complexity: An Introduction to Collaborative Rationality for Public Policy*, 1 edition (Milton Park, Abingdon, Oxon ; New York, NY: Routledge, 2010).

and legitimized as part of a formal process, decision-makers may still fall back on traditional expertise to guide plans and decisions.¹³⁹

The devaluation of local knowledge is pervasive. Various studies have found that laypeople often do not trust their own knowledge in the face of “real” experts.¹⁴⁰ Experts involved in formal decision-making processes tend to adopt the ‘deficit model’ of expertise; they see it as their job to fill the knowledge gap among non-experts. The expert dismissal of non-expert knowledge has been particularly egregious in the arenas of environmental justice, environmental epidemiology, and the ecological and public health impacts of toxic chemicals. Countless examples have been documented of expert dismissal of local concerns about exposure to toxins, cancer clusters, and wildlife die-offs. The history of the environmental justice movement in the U.S. traces back to the intentional siting of hazardous waste facilities over local objections;¹⁴¹ recently, the catastrophe of lead poisoning in Flint, MI demonstrates the ease with which local concerns continue to be overridden, even in the face of copious evidence.¹⁴² The privileging of expert knowledge over other forms of knowing has also had dramatic and scarring consequences in urban planning, particularly in the wake of High

¹³⁹ Diana MacCallum and Diane Hopkins, “The Changing Discourse of City Plans: Rationalities of Planning in Perth, 1955–2010,” *Planning Theory & Practice* 12, no. 4 (December 2011): 485–510, doi:10.1080/14649357.2011.626313; Joshua J. Ramisch, “‘They Don’t Know What They Are Talking About’: Learning from the Dissonances in Dialogue about Soil Fertility Knowledge and Experimental Practice in Western Kenya,” *Geoforum* 55 (August 2014): 120–32, doi:10.1016/j.geoforum.2014.05.009.

¹⁴⁰ Mirilia Bonnes et al., “Inhabitants’ and Experts’ Assessments of Environmental Quality for Urban Sustainability,” *Journal of Social Issues* 63, no. 1 (March 1, 2007): 59–78, doi:10.1111/j.1540-4560.2007.00496.x; Taylor and de Loë, “Conceptualizations of Local Knowledge in Collaborative Environmental Governance.”

¹⁴¹ Bullard, *Dumping in Dixie: Race, Class and Environmental Quality*.

¹⁴² Barbara L. Allen, *Uneasy Alchemy: Citizens and Experts in Louisiana’s Chemical Corridor Disputes*, Urban and Industrial Environments (Cambridge, Mass: MIT Press, 2003); Bullard, *Dumping in Dixie: Race, Class and Environmental Quality*; Melissa Checker, *Polluted Promises: Environmental Racism and the Search for Justice in a Southern Town* (New York: New York University Press, 2005); Amy Davidson, “The Contempt That Poisoned Flint’s Water,” *The New Yorker*, January 22, 2016, <http://www.newyorker.com/news/amy-davidson/the-contempt-that-poisoned-flints-water>; Davis, *When Smoke Ran like Water*; Roderick Nash, *Wilderness and the American Mind* (Yale University Press, 2001); Rich, “The Lawyer Who Became DuPont’s Worst Nightmare”; Julie Sze, *Noxious New York: The Racial Politics of Urban Health and Environmental Justice* (Cambridge, MA: MIT Press, 2007); Christine J. Walley, “‘They Scorn Us Because We Are Uneducated’ Knowledge and Power in a Tanzanian Marine Park,” *Ethnography* 3, no. 3 (September 1, 2002): 265–98.

Modernism and urban renewal.¹⁴³

In reaction to copious evidence of harmful decisions taken by, or on the advice of experts, distrust flows both ways. Credibility has become an increasing problem for experts and the bureaucrats who rely on them; citizens do not blindly accept expertise from scientists or policy-makers.¹⁴⁴ Specifically in relation to air quality, Petts and Brooks observe that “Scientific information on air quality is not simply accepted and absorbed by the public: rather the credibility and trustworthiness of this information are critically evaluated and judged.”¹⁴⁵

The crisis of credibility has been jarring for urban and environmental planners. No longer able to operate solely as expert advisors or unchallenged powerbrokers, urban and environmental planning have had to redefine the nature of their professions. This reshaping has rested fundamentally on the recognition of alternative forms of knowledge and expertise. Reams of research have been mobilized to identify and legitimize lay knowledge in planning and public problem solving practices. Lay knowledge does include sentiments and values, as has always been understood in contrast to expertise, but also much more. Jason Corburn¹⁴⁶ highlights four key arenas in which the inclusion of local knowledge improves both the process and outcomes of environmental planning: epistemology, procedural democracy, effectiveness, and distributive justice. By epistemology, he means that the inclusion of local knowledge adds specificity and particularity to professional tools

¹⁴³ Jacobs, *The Death and Life of Great American Cities*; James C. Scott, “Authoritarian High Modernism,” in *Readings in Planning Theory*, ed. Susan S. Fainstein and Scott Campbell (West Sussex, England: Wiley-Blackwell, 2012).

¹⁴⁴ Judith Bush, Suzanne Moffatt, and Christine E. Dunn, “Keeping the Public Informed? Public Negotiation of Air Quality Information,” *Public Understanding of Science* 10, no. 2 (April 1, 2001): 213–29, doi:10.1088/0963-6625/10/2/304; Limoges, “Expert Knowledge and Decision-Making in Controversy Contexts”; Petts, “The Public—expert Interface in Local Waste Management Decisions”; Petts and Brooks, “Expert Conceptualisations of the Role of Lay Knowledge in Environmental Decisionmaking.”

¹⁴⁵ “Expert Conceptualisations of the Role of Lay Knowledge in Environmental Decisionmaking,” 1053.

¹⁴⁶ “Bringing Local Knowledge into Environmental Decision Making: Improving Urban Planning for Communities at Risk.”

that are designed to aggregate and generalize; it reveals heterogeneity in places and populations that are assumed to be uniform; it contributes key data about lifestyles and culture that have implications for assessing causal claims; and it can reveal unspoken information that does not “easily lend itself to the reductionist model making that is characteristic of professional science.”¹⁴⁷ It has long been acknowledged by proponents of collaborative planning that inclusive techniques that harness the knowledge, vision, and values of a range of stakeholders will produce wiser, more implementable, and more durable outcomes.¹⁴⁸ Judith Petts has argued that non-experts are required for accurately assessing risk in a real social and political contexts.¹⁴⁹ Innes and Booher¹⁵⁰ contend that incorporating local knowledge is essential for achieving resilient solutions to complex problems in a rapidly changing, increasingly plural physical and socio-political context. Wynne in an oft-cited study of Cumbrian sheep farmers affected by nuclear fallout demonstrated that scientists and policy makers made terrible miscalculations with both scientific and socio-economic consequences because they ignored the specialized expertise of the sheep farmers about their farming practices and sheep grazing behavior.¹⁵¹ Non-expert knowledge has also been demonstrated to be useful for identifying less expensive, less risky, and more preventative solutions.¹⁵²

Not only has lay knowledge itself been shown to have instrumental benefits in urban and environmental planning, but citizens also contribute at a higher level of sophistication than experts

¹⁴⁷ Ibid., 427.

¹⁴⁸ Judith E. Innes, “Planning Through Consensus Building: A New View of the Comprehensive Planning Ideal,” *Journal of the American Planning Association* 62, no. 4 (1996): 460–72, doi:10.1080/01944369608975712; Innes and Booher, *Planning with Complexity*; Lawrence Susskind and Jeffrey L. Cruikshank, *Breaking the Impasse: Consensual Approaches to Resolving Public Disputes* (New York: Basic Books, 1987).

¹⁴⁹ Petts, “Enhancing Environmental Equity through Decision-Making”; Petts, “Barriers to Participation and Deliberation in Risk Decisions.”

¹⁵⁰ *Planning with Complexity*.

¹⁵¹ “Misunderstood Misunderstandings: Social Identities and Public Uptake of Science.”

¹⁵² Boiral, “Tacit Knowledge and Environmental Management”; Jeronimo and Garcia, “Risks, Alternative Knowledge Strategies and Democratic Legitimacy.”

generally assume.¹⁵³ Lay people's participation has become essential in many environmental monitoring activities,¹⁵⁴ and critically, lay people's perceptions of environmental problems have been shown to be as or more accurate than alternative, professional monitoring techniques.¹⁵⁵ Further, lay participants in complex technical planning processes learn quickly; while they may enter processes with limited technical capacity,¹⁵⁶ lay people increasingly have access to information beyond what is presented to them within the context of a planning process. If a process is well structured and long enough, participants are able to learn what they need to know to participate meaningfully even in decisions about highly technical processes.¹⁵⁷

But while many researchers emphasize the value of lay knowledge,¹⁵⁸ their discussion tends to ignore the troubling fact that in order to be integrated into a shared process, lay knowledge is generally transformed or translated into a technocratic format before it productively influences a decision or an assessment. Data is sometimes actually verified through alternative, technocratic means.¹⁵⁹ In monitoring processes, while locals may contribute important information and even influence study design, their knowledge must be reduced to variables to be measured by professional techniques. In other words, the emphasis on incorporating lay knowledge into

¹⁵³ Frank Fischer, *Citizens, Experts, and the Environment: The Politics of Local Knowledge* (Durham and London: Duke University Press, 2000).

¹⁵⁴ Michael K. Heinman, "Science by the People: Grassroots Environmental Monitoring and the Debate Over Scientific Expertise," *Journal of Planning Education and Research* 16, no. 4 (1997): 291–199.

¹⁵⁵ Bonnes et al., "Inhabitants' and Experts' Assessments of Environmental Quality for Urban Sustainability"; Corburn, "Community Knowledge in Environmental Health Science: Co-Producing Policy Expertise."

¹⁵⁶ Taylor and de Loë, "Conceptualizations of Local Knowledge in Collaborative Environmental Governance."

¹⁵⁷ Fischer, *Citizens, Experts, and the Environment: The Politics of Local Knowledge*; Petts, "The Public—expert Interface in Local Waste Management Decisions."

¹⁵⁸ Corburn, "Bringing Local Knowledge into Environmental Decision Making: Improving Urban Planning for Communities at Risk"; R. Giordano et al., "Integrating Local and Technical Knowledge to Support Soil Salinity Monitoring in the Amudarya River Basin," *Journal of Environmental Management* 91, no. 8 (August 2010): 1718–29, doi:10.1016/j.jenvman.2010.03.010; Heinman, "Science by the People: Grassroots Environmental Monitoring and the Debate Over Scientific Expertise."

¹⁵⁹ see: Giordano et al., "Integrating Local and Technical Knowledge to Support Soil Salinity Monitoring in the Amudarya River Basin."

planning runs the risk of ignoring, or obscuring the fundamental power dynamics that protect and privilege expertise.

Especially within the sub-field of expertise in risk studies, researchers have begun to challenge the lay-expert framing, arguing that reducing knowledge to two opposing categories reifies orthodox processes of knowledge creation. In Carolan's words, the framing serves "to uphold traditional distinctions between science and policy by allocating rights as to who can (and cannot) interpret science,"¹⁶⁰ In a similar critique, Wynne argues that these categories "[reinforce] just those fundamental dichotomies which are key parts of the problem of modernity: natural knowledge versus 'social' knowledge, nature versus society, expert versus lay knowledge"¹⁶¹ Further, the very tools that can now isolate and monitor pollutants in the environment emerge from the practices and worldview of positivist, rational "progress" that caused many contemporary forms of pollution and environmental degradation in the first place.¹⁶²

In addition to these key theoretical objections to the lay-expert framing, researchers have pointed out empirical problems as well. First and foremost, the framing suggests dichotomous, singular and uniform bodies of knowledge. Not only does it imply, incorrectly, that experts deal only in facts and lay people in emotions and values,¹⁶³ it does not provide room for the difficult reality that experts disagree frequently.¹⁶⁴ In many environmental conflicts, every group with a stake in the outcome is armed with a bevy of experts, presenting selected facts, struggling to dominate the

¹⁶⁰ "Science, Expertise and the Democratization of the Decision-Making Process," 662.

¹⁶¹ "May the Sheep Safely Graze? A Reflexive View of the Expert-Lay Knowledge Divide," 45.

¹⁶² Fischer, *Citizens, Experts, and the Environment: The Politics of Local Knowledge*, 89–108.

¹⁶³ Tesh, "Citizen Experts in Environmental Risk."

¹⁶⁴ Petts and Brooks, "Expert Conceptualisations of the Role of Lay Knowledge in Environmental Decisionmaking"; Tesh, "Citizen Experts in Environmental Risk."

narrative, and bringing the technical into the realm of the political.¹⁶⁵ Further, the expert-lay frame suggests stable and isolated identities when in fact there can be significant crossover between “experts” and “laypeople.” Someone acting in their own interest as a citizen in a particular conflict may well be an expert in some capacity; and experts live and invest in particular places where they are also citizens. And often, the policy-makers at the heart of public decision-making are experts in some capacities (they possess administrative or bureaucratic expertise, perhaps¹⁶⁶), but also incorporate both expert and lay knowledge—their own and from their advisors and constituents—into their decisions.¹⁶⁷ The documented transformation of participants—both expert and lay—in the course of collaborative processes further suggests that the ideal-type model is insufficient for explaining real-world processes, or for challenging the embedded power landscape baked into the expert-lay model.¹⁶⁸

In the face of critiques of the rigid expert-lay epistemological model, researchers have identified many other varieties of expertise, and offer fundamentally different conceptions of what expertise actually is. Lindblom and Cohen suggest that expert provided data is only useful and relevant in decision-making after it has been contextualized; it is through the combination of expert knowledge with “ordinary knowledge” that “usable knowledge”—information that actually informs problem-solving in a productive way—is created.¹⁶⁹ Following this view, a new conception of expertise has emerged that allows “greater epistemic diversity” without collapsing into “an epistemic free-for-

¹⁶⁵ Nelkin, “The Political Impact of Technical Expertise”; Tesh, “Citizen Experts in Environmental Risk.”

¹⁶⁶ Edelenbos, van Buuren, and van Schie, “Co-Producing Knowledge.”

¹⁶⁷ Innes and Booher, *Planning with Complexity*, 142–69.

¹⁶⁸ Michael S. Carolan, “Sustainable Agriculture, Science and the Co-Production of ‘Expert’ Knowledge: The Value of Interactional Expertise,” *Local Environment* 11, no. 4 (2006): 421–31; Judith E. Innes, “Information in Communicative Planning,” *Journal of the American Planning Association* 64, no. 1 (March 31, 1998): 52–63, doi:10.1080/01944369808975956.

¹⁶⁹ *Usable Knowledge*.

all.”¹⁷⁰ In this view, expertise is “not only a message, but also, and mainly, a process.”¹⁷¹

Within the expertise-as-process framework, knowledge is “understood as a learning process resulting from interactions between people in a decision-making context.”¹⁷² Inputs come from multiple sources, expert and lay, alike. Expert contributors are not assumed at the outset to provide answers; rather, a process of exchange among different actors with different knowledges defines and legitimizes the status of expertise.¹⁷³ Through this process, participants’ understandings of the problem they seek to solve and its context is transformed.¹⁷⁴

The expertise-as-process framework has been profoundly influential in planning. In practice it manifests as the co-production of knowledge. Co-production adopts Habermas’s theory of collaborative rationality, and aims “to open up how authoritative technical knowledge is produced in society and gets stabilized and institutionalized over time, so that it becomes a ‘given’ or ‘taken for granted truth.’”¹⁷⁵ Its purpose is both to redistribute power in an unequal system, but also to benefit all participants in collaborative processes by transforming and educating all participants and landing on solutions that better serve all constituents.¹⁷⁶

¹⁷⁰ Carolan, “Sustainable Agriculture, Science and the Co-Production of ‘Expert’ Knowledge: The Value of Interactional Expertise,” 422.

¹⁷¹ Limoges, “Expert Knowledge and Decision-Making in Controversy Contexts,” 418.

¹⁷² Petts, “The Public—expert Interface in Local Waste Management Decisions.”

¹⁷³ Limoges, “Expert Knowledge and Decision-Making in Controversy Contexts”; Petts, “The Public—expert Interface in Local Waste Management Decisions”; Petts and Brooks, “Expert Conceptualisations of the Role of Lay Knowledge in Environmental Decisionmaking.”

¹⁷⁴ Carolan, “Sustainable Agriculture, Science and the Co-Production of ‘Expert’ Knowledge: The Value of Interactional Expertise”; Innes, “Information in Communicative Planning.”

¹⁷⁵ Corburn, “Community Knowledge in Environmental Health Science: Co-Producing Policy Expertise,” 152.

¹⁷⁶ Carolan, “Sustainable Agriculture, Science and the Co-Production of ‘Expert’ Knowledge: The Value of Interactional Expertise”; Corburn, “Community Knowledge in Environmental Health Science: Co-Producing Policy Expertise”; Innes and Booher, *Planning with Complexity*; Petts, “Enhancing Environmental Equity through Decision-Making.”

Processes of co-production do not tend to happen naturally or automatically. Researchers argue that while occasionally non-expert knowledge will eventually make its way into expert-led processes, generally the co-production of knowledge occurs as the result of concerted planning and effort. Michael Carolan suggests that translating between different knowledge forms is a type of knowledge in itself, “interactional knowledge;” he argues that this knowledge is essential to fostering discourse and improving outcomes.¹⁷⁷ John Friedmann goes further, suggesting that planning “is that professional practice that specifically seeks to connect forms of knowledge with forms of action in the public domain.”¹⁷⁸ While urban and environmental planning theorists argue for more skill-building in this arena, it is not clear that professionals are fulfilling the role of facilitators of the co-production of knowledge in practice.¹⁷⁹ Furthermore, if planners are to actively take on the role of adjudicating competing knowledge claims within a process, then there needs also to be institutional space for assessing such claims, and for excluding those that do not, for various reasons, stand up to scrutiny.¹⁸⁰ In the wake of the 2016 presidential election, it is clear that this process of knowledge adjudication is not happening effectively, at least in the political domain.

What is at stake in the co-production of knowledge is nothing short of a fundamental redistribution of power. The process aims to cast experts, policy makers, and citizens as partners in problem-solving, upending the entrenched modernist, top-down model of planning, that despite generations of critique, still dominates in many places and processes. Many proponents and observers of

¹⁷⁷ “Sustainable Agriculture, Science and the Co-Production of ‘Expert’ Knowledge: The Value of Interactional Expertise.”

¹⁷⁸ “Toward a Non-Euclidian Mode of Planning,” *Journal of the American Planning Association* 59, no. 4 (September 1993): 482.

¹⁷⁹ Antonella Maiello et al., “Public Managers as Catalysts of Knowledge Co-Production? Investigating Knowledge Dynamics in Local Environmental Policy,” *Environmental Science & Policy* 27 (March 2013): 141–50, doi:10.1016/j.envsci.2012.12.007.

¹⁸⁰ Yvonne Rydin, “Re-Examining the Role of Knowledge Within Planning Theory,” *Planning Theory* 6, no. 1 (March 1, 2007): 52–68, doi:10.1177/1473095207075161.

knowledge co-production processes argue that in order to be transformative in policy-making or problem-solving settings, non-experts need to be involved in setting the terms of the problem.¹⁸¹ As Petts and Brooks observe, “difficulties are created in the fora of decision making when decision problems are framed in limited terms.”¹⁸² They argue further that

Environmental problems, like pollution, are socially defined. A regulatory system to control air quality at the local level is the end product of social negotiation, definition and interpretation... The definition and framing of air pollution are a sociopolitical construction, not merely the outcome of public comment in a specific situation... Without an appreciation of the sociopolitical framing of air pollution [by experts], the potential value of lay knowledge in a deliberative and cooperative decision process can be reduced to a relatively passive role focused on achieving buy-in (optimistically) to environmental solutions, rather than definition of, and agreement upon, these.¹⁸³

As discussed above, most contributors to the problem framing literature acknowledge that it is a highly political and consequential process, and that it therefore matters *who* participates. However, even while it is widely acknowledged that the privilege of problem framing is a source of power, the literature stops short of a normative call to ‘open up’¹⁸⁴ the problem framing process as a means to redistribute power, deepen democracy, increase options, or achieve more durable, more resilient, or otherwise better outcomes.

Meanwhile, the literature around expertise in urban and environmental planning argues that a range of voices, both expert and lay, should be included in problem framing exercises, but does not

¹⁸¹ James P. Evans, “Lost in Translation? Exploring the Interface between Local Environmental Research and Policymaking,” *Environment and Planning A* 38, no. 3 (March 1, 2006): 517–31, doi:10.1068/a37393; Innes and Booher, *Planning with Complexity*; Limoges, “Expert Knowledge and Decision-Making in Controversy Contexts”; Petts, “Enhancing Environmental Equity through Decision-Making”; Taylor and de Loë, “Conceptualizations of Local Knowledge in Collaborative Environmental Governance”; Judith Tsouvalis, Susanne Seymour, and Charles Watkins, “Exploring Knowledge-Cultures: Precision Farming, Yield Mapping, and the Expert–Farmer Interface,” *Environment and Planning A* 32, no. 5 (May 1, 2000): 909–24, doi:10.1068/a32138.

¹⁸² “Expert Conceptualisations of the Role of Lay Knowledge in Environmental Decisionmaking,” 1074.

¹⁸³ *Ibid.*, 1054.

¹⁸⁴ Andy Stirling, “‘Opening Up’ and ‘Closing Down’ Power, Participation, and Pluralism in the Social Appraisal of Technology,” *Science, Technology & Human Values* 33, no. 2 (March 1, 2008): 262–94, doi:10.1177/0162243907311265.

engage with a clear or empirical discussion about how this might actually work in a real policy-making context. Researchers continue to demonstrate that lay participants need to become expert to a certain degree, or that local knowledge must be translated into technical terms, in order to participate in problem-solving processes *when the terms of the problems have been framed in technical terms by technical experts.*¹⁸⁵ Allowing non-experts to set the terms of the problem, may, according to some observers, may actually circumvent the need for highly technical solutions.¹⁸⁶ But a substantial gap remains in order to adequately demonstrate *how* explicit non-expert participation in problem framing activities shapes policy-making and problem solving outcomes.

Wasteways

Municipal waste systems manage one element of a society's waste regime: the materials that have been determined to be waste by their users. MSWM systems collect and treat those materials within the logics of the waste regime in which they are situated. But given that nearly every city in the United States has its own municipal waste system, and the fact that they operate quite differently, it is clear that waste regimes do not dictate waste management uniformly.

Wasteways are a way to understand the variation of local waste management outcomes in relation to the macro waste regime in which they are situated. Their variation is determined, in part by the particularities of historical, infrastructural, and institutional development of

¹⁸⁵ see: Giordano et al., "Integrating Local and Technical Knowledge to Support Soil Salinity Monitoring in the Amudarya River Basin"; Lucie Laurian, "A Prerequisite for Participation Environmental Knowledge and What Residents Know about Local Toxic Sites," *Journal of Planning Education and Research* 22, no. 3 (March 1, 2003): 257–69, doi:10.1177/0739456X02250316.

¹⁸⁶ Boiral, "Tacit Knowledge and Environmental Management"; Jeronimo and Garcia, "Risks, Alternative Knowledge Strategies and Democratic Legitimacy"; Petts and Brooks, "Expert Conceptualisations of the Role of Lay Knowledge in Environmental Decisionmaking."

each city. Within these variations, the wasteways are determined by how the problem of waste is defined and the nature of the expertise that is marshalled in process of defining, and consequently solving, the problem of waste. The key elements of problem definition include broadly whether waste material is considered a cost or a resource, and the degree to which its particular material and temporal qualities are acknowledged in waste planning discourse. The key elements of expertise are what kinds of expertise are represented on municipal waste management staff and how and at what points are non-expert knowledges sought and included in waste planning and operational decision making.

CHAPTER 3

When you have a landfill, everything looks like garbage: the evolution of the Weak Recycling Waste Regime

“The construction of waste as an economic resource is an answer to the question of waste as a problem.”¹⁸⁷

Introduction

This chapter moors the theories of waste governance and waste regimes discussed in the previous chapter in the American context in order to set the stage for the analysis of Seattle and Boston.

Drawing on the well documented histories of waste management and consumption patterns in the United States, I demonstrate how early framings of garbage as aesthetic and public health problems in cities, and the resultant management techniques of collection, removal, and disposal, are the anchoring elements of, following Martin Melosi, a Sanitary City Waste Regime. The practices of efficient waste collection and removal that were perfected during the 19th century established norms of garbage invisibility, an out-of-sight, out-of-mind ethic, that allowed for rapid urban growth and ballooning consumption.¹⁸⁸

The Sanitary City Waste Regime dominated for decades. After World War II, two significant crises challenged the regime. First, the post-war rise of disposable consumer products resulted in a scourge of litter that disconcerted citizens accustomed to cleaner landscapes both in cities and beyond. Second, recognition of a variety of toxic pollutions from disposal infrastructures gave rise to environmental regulation, and also aligned with increased citizen opposition to neighboring

¹⁸⁷ Hultman and Corvellec, “The European Waste Hierarchy.”

¹⁸⁸ This chapter draws heavily on Martin Melosi’s seminal book on garbage history in the U.S., *Garbage in the Cities*. Melosi frames the history of waste management around a series of problem definitions, including waste as an engineering problem, waste as an aesthetic problem, and ultimately waste as pollution. I have adapted his framing in this chapter, with the addition of other sources, to serve as the foundation for understanding the development of the Weak Recycling Waste Regime. Also, while Melosi does examine the landfill disposal crisis of the 1980s in detail, he touches only briefly on litter, and does not consider the more recent movements of ISWM and Zero Waste examined at the end of this chapter.

disposal facilities. As a result, it became more difficult and more expensive to site new landfills and incinerators. As old municipal landfills reached capacity, municipal waste managers and city leaders were thrust into panic at the very real possibility of having nowhere to put their garbage. The litter and disposal crises undermined the Sanitary City Waste Regime's promise of invisible garbage and reignited a long-dormant public discourse about garbage and society. From this discourse, a new definition of the waste problem emerged which drew both on the visual and environmental impacts of proliferating trash: garbage as pollution. This challenged a fundamental assumption of the Sanitary City Waste Regime that collection and removal were enough to protect cities, human health, and the broader environment from the effects of garbage.

The contestations around litter and waste disposal gave rise to a variety of alternative waste management ideas and techniques, including recycling and several more radical reframings. Recycling, as an individually-driven solution to the pollution problem, was promoted by industry and took root. This tweak to the system altered some precepts of the Sanitary City Waste Regime. For example, individuals became responsible for making informed consumption choices, and handling waste and recycling correctly. In exchange the new regime still promised invisible wastes—out of sight and out of mind—so that guilt-free consumption and waste generation could continue unabated. The new version of the regime, which I call a Weak Recycling Waste Regime, has been challenged by more radical proposals, discussed at the end of this chapter, including Zero Waste, and complete reassessments of the role of garbage in society. But these movements have not yet had widespread impact on dominant municipal waste practices.

The Sanitary City Waste Regime: Garbage as Aesthetic and Public Health Problems

The unsanitary state of industrial cities has been well documented; streets were narrow and full of human, animal, and all other varieties of waste.¹⁸⁹ Lacking infrastructure for, or tradition of, formal waste management, people often threw garbage—which at the time was mostly organic—right out of their windows into the streets. Until the mid-19th century, solid waste was the domain of individuals and small private haulers who usually specialized in a single material, such as rags, bones, or oil, that could be used as the input for some nearby industrial process.

As part of larger movements around public health, infrastructure development, and urban political reform, garbage became an issue of widespread public concern. A variety of urban professionals worked to define the problem of garbage and develop appropriate solutions. Engineers, public health professionals, and women reformers were especially instrumental in pressing public officials to shift from “individual to public accountability” for urban sanitation, including refuse management.¹⁹⁰ To coax elected officials into taking responsibility for waste management, urban reformers successfully constructed garbage as a direct threat to public health, and an ugly and disorderly phenomena that hindered growth and sowed chaos. This was accomplished largely through the guise of the City Beautiful movement and associated movements of slum clearance.

While women were largely absent from many urban reform efforts and municipal policy making processes, the domain of waste is one in which women exercised considerable influence, both as

¹⁸⁹ Friedrich Engels, *The Condition of the Working Class in England* (New York and London: Penguin Books, 1987); Peter Hall, “The City of Dreadful Night,” in *Cities of Tomorrow*, Updated Edition (Oxford: Blackwell Publishers, 1996), 14–46.

¹⁹⁰ Martin V. Melosi, “Sanitary Engineers in American Cities: Changing Roles from the Age of Miasmas to the Age of Ecology,” in *Civil Engineering History: Engineers Make History*, ed. Jerry R. Rogers et al. (New York: ASCE, 1996), 110.

elite proponents of more civilized cities and as quasi-professionals making space for women's expertise in the municipal domain. Women's clubs in the late-19th century became an important forum for women's participation in the building of cities. Daphne Spain has shown how women, operating through clubs and settlement houses, were important agents in shaping the built environment. Their work resulted in the "redemptive spaces" of parks, playgrounds, and public baths, among others. These spaces, particularly the bath houses, were woven into contemporary moralizing about cleanliness, hygiene, and social order.¹⁹¹

Beyond the physical imprint of redemptive spaces that allowed for a certain physical and spiritual cleanliness at the scale of the individual, women's organizations also advocated for municipal cleanliness. Women's expertise in maintaining the household was well established; many thus viewed "municipal housekeeping" as a natural extension of women's daily duties. Women worked actively in, and were largely accepted as contributing valuable knowledge to the field of urban cleanliness.¹⁹² For a time embedded in the city beautiful movement, but also operating beyond the strictures of that movement, women's groups organized street-cleanings, and advocated for municipal policy and programs to demonstrate pride in the environment through clean streets.¹⁹³ In many cities around the country, women successfully advocated for improved municipal street-cleaning practices, prohibitions on open dumping, and a variety of other laws designed to keep cities tidy.¹⁹⁴ Although some have argued that the professionalization of sanitation, urban design, and master planning of the City Beautiful movement began to exclude women by the turn of the

¹⁹¹ Daphne Spain, *How Women Saved the City* (Minneapolis: University of Minnesota Press, 2001).

¹⁹² Suellen M. Hoy, "'Municipal Housekeeping': The Role of Women in Improving Urban Sanitation Practices, 1880-1917," in *Pollution and Reform in American Cities, 1870-1930*, ed. Martin V. Melosi (Austin: University of Texas Press, 1980), 173-98.

¹⁹³ Bonj Szczygiel, "'City Beautiful' Revisited: An Analysis of Nineteenth-Century Civic Improvement Efforts," *Journal of Urban History* 29, no. 2 (January 1, 2003): 107-32, doi:10.1177/0096144202238870.

¹⁹⁴ Hoy, "'Municipal Housekeeping': The Role of Women in Improving Urban Sanitation Practices, 1880-1917."

20th century, women continued to push for sanitary reform and beautification both as individual crusaders and through civic organizations.¹⁹⁵

Women's advocacy was largely grounded in concerns about wellbeing and assimilation of new immigrants, but it functioned to call attention to the visual impacts of waste; they cast garbage in cities as an aesthetic problem. Once so established, trash as an aesthetic problem was widely adopted by city politicians and professional movements. In particular, the issue was promoted through the various practitioners of the City Beautiful movement: cleanliness became an essential component of spatial order that City Beautiful practitioners believed would confer social order on chaotic, poor, uneducated, and immigrant urban populations. Many local municipal art and municipal improvement societies that accepted the mantle of City Beautiful advocated for municipal cleanliness along side civic art.¹⁹⁶ As noted by Melosi, "Sensory consideration—sights and smells—had often played a role in the pre-1893 sanitation protests, but City Beautiful institutionalized reform for aesthetics' sake on a national scale."¹⁹⁷

Alongside the concerns about the unsightly nature of open dumping were emerging fears about disease. Melosi has referred to the to the second half of the 19th century as the "age of sanitation."¹⁹⁸ He argues that this era was ushered in at least in part in response to Edwin Chadwick's widely-disseminated 1842 *Report on the Sanitary Condition of the Labouring Population in Great Britain*, which argued that urban filth was responsible for a great deal of disease and poor

¹⁹⁵ Szczygiel, "City Beautiful' Revisited: An Analysis of Nineteenth-Century Civic Improvement Efforts."

¹⁹⁶ Jon A. Peterson, "The City Beautiful Movement Forgotten Origins and Lost Meanings," *Journal of Urban History* 2, no. 4 (August 1, 1976): 415–34, doi:10.1177/009614427600200402.

¹⁹⁷ *Garbage in the Cities: Refuse, Reform, and the Environment*, Revised Edition (Pittsburgh, PA: University of Pittsburgh Press, 2005), 93.

¹⁹⁸ *Ibid.*, 9.

living conditions. It took until the 1890s, though, for garbage to be implicated in the wider anxieties about filth and miasma.

By the early 20th century, sanitary engineers were being trained in the many types and characteristics of solid wastes.¹⁹⁹ Public health became a key motivator for municipal engineers: “Referring to street conditions in Boston, an engineer noted that street cleaning ‘having been found to have so large an influence on the health and mortality of a community, a mere occasional attempt to clear up what street litter we cannot climb over is not sufficient.’”²⁰⁰ As Melosi notes further, “hygiene concerns proliferated in local media around the country, imbuing refuse reform with a sense of direction and purpose.”²⁰¹

Reformers in the public health and City Beautiful traditions were effectively garnered media attention for sanitation issues and organized local interests to pressure municipal authorities to provide adequate refuse management. Melosi notes that these reformers were also interested in cleaning up dirty politics—visual order represented social order, but also political order. In terms of waste management, this meant that contracting for sanitation services was not adequate.

Reformers demanded that municipalities provide these services directly. Civic groups “hoped that greater municipal commitment to such services as garbage removal and street cleaning would mean a greater sensitivity of government to the needs and demands of the people as a whole.”²⁰² Col.

George Waring, an early pioneer in municipal waste management and the first sanitation commissioner of New York City, believed that “cleanliness was a gauge of civilization.”²⁰³ Through

¹⁹⁹ Morse, *The Collection and Disposal of Municipal Waste*, 14.

²⁰⁰ Melosi, *Garbage in the Cities: Refuse, Reform, and the Environment*, 22.

²⁰¹ *Ibid.*, 28.

²⁰² *Ibid.*, 95.

²⁰³ *Ibid.*, 49.

the reform movements of the industrial city, effective waste management had become a symbol of a well-run city.

Engineering as the solution

In both the aesthetic and public health frames, the problem of garbage lay, to borrow Mary Douglas's phrasing, in its presence in the wrong place, i.e., the streets. As urban filth was tied closely with corrupt machine politics in eyes of reformers, the obvious solution to the problems of garbage was municipally managed removal of the offending wastes from central cities. Given the prominence of the public health problem frame, and the continued dominance of the filth theory of disease, the earliest municipal waste programs were organized by city health departments. But as the filth theory of disease gave way to germ theory the late 19th century, and sanitation was challenged as the best means to prevent the spread of contagious disease, city reformers began to argue that health departments should no longer oversee the collection and disposal of rubbish.

As health departments ceded waste management responsibilities, engineers were the obvious replacement. Their technical and scientific orientation were clear descendants from the early sanitation reformers, like New York's Colonel George Waring, and they successfully marketed themselves as neutral experts, "above the din of local politics."²⁰⁴ With the support of reformers and politicians, sanitary engineers began to develop systems to hygienically remove wastes from urban centers and dispose of them. By the turn of the 20th century, sanitary engineers, with the political legitimacy of the engineering label and the credentials of public health expertise, had become essential figures in municipal waste management. Sanitary engineers "were chief among the

²⁰⁴ Stanley K. Schultz and Clay McShane, "To Engineer the Metropolis: Sewers, Sanitation, and City Planning in Late-Nineteenth-Century America," *The Journal of American History* 65, no. 2 (September 1, 1978): 399, doi:10.2307/1894086.

technocrat elite” and as such, held much sway in decisions about public infrastructure and sanitation policy.²⁰⁵

As sanitary engineers rose in prominence, they became more effective marketers for their own expertise. An early sanitary engineering text trumpeted: “Sanitary science embraces those principles and methods by which the health of the community is promoted and the spread of disease is prevented.”²⁰⁶ Through professional organizations, they published journals, established the bounds of core professional knowledge, and developed a coherent image of sanitation problems and how they should be solved. Sanitary engineers gathered copious data, compared effectiveness of various collection and disposal methods, and ultimately developed and disseminated standards of practice that further secured the need for specialized expertise in the field of waste management. Open dumping, open burning, and other “primitive” methods of disposal were increasingly viewed as inadequate. After the turn of the 20th century when filth itself was not seen as the cause of disease, inadequate sanitary practice remained intimately connected to the question of health. One early municipal waste management text by a prominent sanitary engineer, William F. Morse, quoted an unnamed health commissioner:

Hauling of garbage to the dump pile is certainly not garbage disposal, but only the removal of filth from one locality to another. The germs of deadly diseases are deposited on the dump piles coming from the ash barrels of infected houses and are in turn carried by flies, mosquitoes, cats, rats and dogs and by the wind into the homes of our people who are thus made ill, and not infrequently death ensues from such out-of-date, outrageous practice. Such methods are not in keeping with the teachings of the progressive spirit of to-day, or in harmony with claims our city would want to assume.²⁰⁷

²⁰⁵ Melosi, “Sanitary Engineers in American Cities: Changing Roles from the Age of Miasmas to the Age of Ecology,” 111.

²⁰⁶ Mansfield Merriman, *Elements of Sanitary Engineering* (New York: John Wiley and Co., 1898) as quoted in Melosi 2005:254.

²⁰⁷ Morse, *The Collection and Disposal of Municipal Waste*, 10.

As the profession and their practices cohered, aesthetics also remained a key area of concern. As one early sanitation text admonished,

There is an aesthetic side to the question [of dumping garbage] that should be considered—the continued presence of these unsightly heaps of refuse matter on the outskirts of towns is not agreeable to the sight of residents or prospective citizens.²⁰⁸

As the problem definitions became more institutionalized, professional and political preference for waste disposal veered towards various methods of combustion, and other more technologically advanced disposal solutions.²⁰⁹ As with sewer systems, refuse management became an increasingly technical enterprise, viewed as outside the realm of politics or everyday experience.²¹⁰

As sanitary engineering practice matured, the discipline created a national framework for resolving what were essentially local problems. In so doing, engineers, the politicians they worked for, and the reformers who supported them shaped the framework of a new American waste regime. They developed detailed definitions of what waste was, how it should be handled and where it belonged.

The role of citizens

Citizens, though the generators of municipal solid waste in their homes and workplaces, played a limited role solid waste problem framing and in the development of solutions. The major reform movements of the day were top-down and driven by elite interests, even those with substantial participation by women. In the Sanitary City waste regime, urban residents were victims of waste. Reformers and engineers sought to protect them, in no small part because they were the labor force for booming industry. Beyond their roles as laborers and potential vectors of disease, citizens had

²⁰⁸ Ibid.

²⁰⁹ Melosi, *Garbage in the Cities: Refuse, Reform, and the Environment*, Benjamin Miller, *Fat of the Land: Garbage in New York, the Last Two Hundred Years* (New York: Four Walls Eight Windows, 2000).

²¹⁰ on the rise of sanitary engineering of sewer systems, see: Eran Ben-Joseph, *The Code of the City: Standards and the Hidden Language of Place Making* (Cambridge, MA and London, England: MIT Press, 2005).

no active role in either the framing of the waste problems, or implementing of solutions. In fact, the institutionalization of waste management as a municipal responsibility encouraged individuals to have less and less contact with their own wastes.

In the early years of municipal waste management, what we think of today simply as “trash” was actually several different categories of materials. For instance, the city of Boston classified ashes, house offal, combustible waste and rubbish, market refuse, street cleanings, and cesspool and catch basin cleanings as separate materials, each of which required a different collection and disposal technique. The state of the art cities at the time—including Boston—organized separate collections so that certain material could be profitably recycled, and others could be efficiently combusted. The key was to separate garbage—wet, organic wastes like food scraps—from ashes and dry wastes like textiles or paper. Garbage could be used as swine feed, mined as a source for the components of nitroglycerine (also known as dynamite) or fertilizer, or compressed to extract valuable fuel oils. Mixed wastes, it was noted critically at the time, could have no further use and had to be buried or burned.²¹¹ Over time, these waste categories were combined and ultimately abandoned until there was only one category: garbage. The material definition became blunter and more general, and technologies of disposal—landfills and incinerators—have been designed for the most part to accommodate everything in a single mass.

However, while the public discourse about waste and sanitation played out in newspapers and city halls, and sanitary engineers constructed systems of waste collection and disposal in cities across the country, the everyday practices of cleanliness, thrift, and wasting were continuing to evolve in American households. Historian Susan Strasser has paid particular attention to the evolution of

²¹¹ Morse, *The Collection and Disposal of Municipal Waste*, 36.

household practices of reuse, remaking, repurposing and recycling towards disposability. Ultimately, she argues, “disposal has been disengaged from whatever is left of household production and assigned to the technocrats who oversee sewers and sanitary landfills.”²¹² American households have slowly ceded their expertise in reusing materials and self-provisioning to engineers and to the market.

The Sanitary City is an apt way to understand the formation of an Weak Recycling Waste Regime that supported both increasing urbanization and increasing commodification. Within this regime, several sets of urban experts—women reformers, city boosters, architects, engineers, and public health professionals—defined waste as the source of disease and disorder. The implicit solution to both the aesthetic and public health problems lay in removing the offending materials from city, just as a responsible housewife would remove wastes from her home.

Household practices have been influenced by the same voices and forces that shaped the municipal hygiene discourse in the public sphere, and are also important constituents of the American waste regime. As municipal waste management programs matured, households came to rely on them to remove the growing amounts of materials that were not reusable or repurposable. The Sanitary City waste regime, thus is characterized by easy wasting with no consequences for the industries that produced consumer goods or the consumers themselves.

With exceptions driven by resource scarcity during the Great Depression and two World Wars, city engineers eventually abandoned all attempts at resource recovery as consumers relied increasingly on new, store-bought provisions rather than homemade or repurposed goods. By the post-World

²¹² Susan Strasser, *Waste and Want: A Social History of Trash* (New York: Metropolitan Books, 1999), 266.

War II era, disposable goods were no longer luxury items for the wealthy, but increasingly cheap alternatives to longer-lasting, reusable alternatives.²¹³ It wasn't until the 1960s, when other interests and professions began to take an interest in waste management, that the diversity and potential value in waste stream materials began to take on new life in the public discourse around waste management.

A New Regime? A Garbage Crisis, Waste as Pollution, and the Rise of Municipal Recycling

The Sanitary City Waste Regime remained intact for several decades. The Great Depression and then World War II brought the growing consumption economy to a grinding halt. During the war, frugality and thrift, always important American values, were suddenly thrust on Americans in with intention and focus through efforts to save and gather materials for the war effort.²¹⁴ Immediately after the war, consumption was recast as a “civic responsibility.”²¹⁵ As manufacturers adapted wartime technologies to peacetime uses, Americans were instructed by labor unions, advertisers, the government, and many more organizations central to public life to shop for the good of America. And they did. Consumption of consumer goods skyrocketed, and right along with it, so did waste. In a trend that began shortly after the war, per capita rates of solid waste generation almost doubled between 1960 and 2013.²¹⁶

By the 1980s, the EPA, along with others, had declared a “War on Waste,”²¹⁷ rhetoric that indicated the ascendance of waste as a new kind of public problem. This was not just about getting waste out

²¹³ Strasser, *Waste and Want: A Social History of Trash*; Lizabeth Cohen, “A Consumers’ Republic: The Politics of Mass Consumption in Postwar America,” *Journal of Consumer Research* 31, no. 1 (June 1, 2004): 236–39, doi:10.1086/383439.

²¹⁴ Strasser, *Waste and Want: A Social History of Trash*; Terrence H. Witkowski, “World War II Poster Campaigns: Preaching Frugality to American Consumers,” *Journal of Advertising* 32, no. 1 (Spring 2003): 69–82.

²¹⁵ Cohen, “A Consumers’ Republic.”

²¹⁶ EPA, “Advancing Sustainable Materials Management: Facts and Figures 2013.”

²¹⁷ US EPA, “America’s War on Waste,” Environmental Fact Sheet (US Environmental Protection Agency, October 1989).

of sight, or Mary Douglas's terms, putting the matter in its place, as it was in the 19th century—in any case, given rapidly shrinking supply of landfill space in cities across the country, there might not be anywhere to put it. Rather, it was the very existence of so much garbage that was the problem. As environmental concerns became enshrined in laws to protect air and water, waste became the “third pollution.”²¹⁸

The Roots of the Garbage Crisis: A Throw-Away Society

From the start of environmental movement in the 1960s, as activists and critics advanced the waste as pollution frame in public discourse, an anxiety about wasteful consumption habits had permeated some segments of American culture.²¹⁹ By the early 1980s, when cities began to experience the repercussions of limited landfill space, many contemporary observers framed the crisis as the result of rampant consumerism and wasteful lifestyles.²²⁰ This was certainly a contributing factor. In 1988, the EPA estimated that solid waste generation per capita had grown by a third since 1960, to over 3.5 pounds per person per day;²²¹ between 1970 and 1986, the EPA estimated that the total municipal waste stream had grown from 112 to 140 million tons per year. They estimated that by 2000, this number would reach 168 million tons.²²² This growth increased pressure on municipal collection and disposal systems that had been designed to accommodate smaller volumes, and municipalities were faced with staggering estimates of continued waste stream growth. With no formal municipal recycling programs, almost all waste generated by households and businesses was disposed.

²¹⁸ Small, *Third Pollution: The National Problem of Solid Waste Disposal*.

²¹⁹ Vance Packard, *The Waste Makers* (New York: David McKay Company, Inc., 1960).

²²⁰ George J. Church, Steven Holmes, and Elizabeth Taylor, “Garbage, Garbage, Everywhere Landfills Are Overflowing, but Alternatives Are Few,” *Time* 132, no. 10 (September 5, 1988): 81; Don Oldenburg, “Garbage! America Faces a Growing Crisis of Volume,” *Los Angeles Times*, October 16, 1988.

²²¹ US EPA, “The Solid Waste Dilemma: An Agenda for Action,” Final Report of the Municipal Solid Waste Task Force (Washington, D.C.: U.S. EPA, February 1989), <http://nepis.epa.gov/>.

²²² US EPA, “The Waste System” (U.S. EPA, November 1988).

Waste composition had changed dramatically as well. With the rise of convenience goods, packaging exploded. Between 1958 and 1966, less than one decade, the amount of packaging sold in the U.S. more than doubled. Only 10% of this material was reused or returned to the manufacturer. The rest was disposed of in the trash.²²³ Much of this packaging was made of plastic. The EPA estimated that plastics production had increased at a rate of about 10% annually between 1960 and 1989. By 1989, plastics constituted 7% of the municipal solid waste stream by weight, and between 14-21% by volume, and were predicted to continue growing.²²⁴ The EPA reported that plastics, while harmful in the marine environment, were largely inert in landfills. But, because plastics do not biodegrade, they therefore shrink the long-term capacity of landfills.²²⁵

Unpacking Pollution

Melosi has characterized the garbage-as-pollution period in the post war era in terms of growth in every dimension. The volume of waste was rapidly growing as consumption grew; each purchase generated more waste as packaging became larger and more complex; the composition of waste was becoming more varied and durable as new materials like plastics entered the waste stream; suburbanization and sprawl led to increased costs of collection; environmental regulation led to increased disposal costs.²²⁶ Garbage was pollution at least in part because it was out of control.

²²³ Arsen Darnay and William E. Franklin, "The Role of Packaging in Solid Waste Management 1966-1976" (Rockville, MD: Bureau of Solid Waste Management, 1969).

²²⁴ The EPA reported that in 2013, plastics constituted approximately 13% of the national solid waste stream by weight; but since plastics are light, they likely constitute a much larger percentage by volume; EPA, "Advancing Sustainable Materials Management: Facts and Figures 2013."

²²⁵ US EPA, "Methods to Manage and Control Plastic Wastes" (U.S. EPA, February 1990), <http://nepis.epa.gov/>.

²²⁶ Melosi, *Garbage in the Cities: Refuse, Reform, and the Environment*, 168–89.

But more than just a fitting label for a new era of expanding wastes, the concept of waste as pollution deserves more unpacking. Pollution, like waste, is a constructed concept; many of the substances and materials that we take for granted as pollution now were once considered neutral, or even salutary.²²⁷ What is viewed from one angle as a symbol of progress, looks from another much like a death knell. As Mary Douglas has observed, “there is no such thing as absolute dirt: it exists in the eye of the beholder. . . .”²²⁸ The uncertainty about what constitutes pollution means more powerful actors in society have an outsized role in determining what counts as harm. From DDT to lead to cigarettes to greenhouse gasses, when scientists and citizens observers raised alarm, industries marshalled lawyers and lobbyists to refute, reframe, distract and obscure.²²⁹

Once a substance or a process is widely considered to be harmful, or in other words has come to be considered pollution, then comes the task of managing it. Douglas argues that attempts to eliminate dirt “are not negative movement[s] but a positive effort to organize the environment.”²³⁰ In the case of the American approach to the regulation of environmental pollutants Douglas’s observation is particularly accurate. Environmental regulations have tended to take each pollutant on its own, in the classificatory tradition of the natural sciences. The EPA has regulated chemical by chemical, symptom by symptom, only after causality is established to such a certain degree that even full throttle industry obfuscation can no longer cast doubt. Air is regulated separately from water; water is regulated separately from food. As Joel Tarr has argued, the result of this segmented approach

²²⁷ Peter Thorsheim, *Inventing Pollution: Coal, Smoke, and Culture in Britain since 1800*, Series in Ecology and History (Athens: Ohio University Press, 2006).

²²⁸ Mary Douglas, *Purity and Danger: An Analysis of the Concepts of Pollution and Taboo*, New Ed Edition (New York and London: Routledge, 1984), 2.

²²⁹ Rachel Carson, *Silent Spring* (Boston: Houghton Mifflin, 1962); Colborn, Dumanoski, and Myers, *Our Stolen Future*; Davis, *When Smoke Ran like Water*; Oreskes and Conway, *Merchants of Doubt*; Davidson, “The Contempt That Poisoned Flint’s Water.”

²³⁰ Douglas, *Purity and Danger: An Analysis of the Concepts of Pollution and Taboo*, 2.

has been that regulation in one sector just pushes the pollution to another form.²³¹ When toxins from smoke stacks are prohibited, they are captured in filters and buried in landfill, for instance, not eliminated at their source.

Defining something as pollution means understanding it in relation to an environment.²³² Thus, the process of constructing pollution also requires the construction of purity, or a “clean” environment. In U.S. questions of purity, nature, and cities have been particularly fraught. Nature has been understood in the popular imagination as both sublime, even divine, and as a “wasteland” that waiting to be made valuable through urbanization. This second American philosophy about nature—a vast wasteland waiting to be exploited—is evident in our language: to *reclaim* is to convert unproductive, wild land into economically productive use; to *improve* is to build a structure, or otherwise reshape wild land for human use. The inverse views of nature present the urban either as a source of oppression and sickness, or as a thriving symbol of progress and civilization. These ideas have always existed in tension with each other,²³³ complicating any attempts to discern the clear locus of a pure “environment” in the American context. What ties these perspectives together is the implicit belief that nature and city are distinct ontological categories.

With the rise of the waste-as-pollution problem frame, the two poles of nature-city came crashing against each other: garbage, that had once been a distinctly urban problem, came to impose itself on landscapes beyond the city, and on the urban natures of parks that had once represented progress

²³¹ Tarr, *The Search for the Ultimate Sink: Urban Pollution in Historical Perspective*.

²³² Nina Wormbs, “Radio Pollution: From Sparks to White Spots” (American Society for Environmental History Annual Meeting, Seattle, WA, April 1, 2016).

²³³ William Cronon, *Changes in the Land: Indians, Colonists, and the Ecology of the New England* (New York: Farrar, Straus, and Giroux, 1983); William Cronon, *Nature’s Metropolis* (New York and London: W. W. Norton & Company, 1992); David E. Nye, *American Technological Sublime* (Cambridge, Mass: MIT Press, 1994); Anne Whiston Spirn, *The Language of Landscape* (New Haven: Yale University Press, 1998); Leo Marx, *The Machine in the Garden: Technology and the Pastoral Ideal in America* (New York: Oxford University Press, 2000); Nash, *Wilderness and the American Mind*.

and uplift. Garbage washed onto suburban and exurban beaches,²³⁴ sewerage slopped onto scenic shores,²³⁵ toxic leachate oozed out of municipal dumps and into urban waterways,²³⁶ mysterious and carcinogenic compounds belched out of municipal waste incinerators and into the lungs of children,²³⁷ and a scourge of disposable beer bottles littered America's scenic byways. The "space envelopes" of nature and the urban were eroding as waste infrastructure failed to keep the comfortable boundary between the two.²³⁸ The core promise of the Sanitary City waste regime to keep wastes out of sight and out of mind was not being met.

In the public discourse around garbage, implicit ideals about what a clean environment was and where it should be helped to shape public policy responses to the waste-as-pollution problem, and ultimately, to reshape the American waste regime. Solutions to the waste-as-pollution problem served to reinforce the patterns of waste removal and sequestration that had emerged during the

²³⁴ Philip S. Gutis, "Beach Waste Raises New Fears," *New York Times*, July 17, 1988, sec. Long Island Weekly; Peter Crescenti, "Will the Beaches Be Clean and Crowded?," *New York Times*, May 28, 1989, sec. Long Island Weekly; Eric Schmitt, "Summer Cranks Up, Anti-Trash Armor Hits the Beach," *New York Times*, May 23, 1989; Joseph F. Sullivan, "Less Debris On Beaches Is Predicted: Officials Plan for a Summer of Clean Beaches New York Covers Barges; New Jersey Renews Debris Patrols.," *New York Times*, February 25, 1989, sec. Metro.

²³⁵ Martin Waldron, "Millions Are Spent to Fight Pollution Of Ocean Beaches," *New York Times*, June 29, 1970; Gordon Grant, "Sewage Keeps Beaches Closed," *Los Angeles Times*, March 29, 1978, sec. Orange County; James Quinn, "Raw Sewage Closes Beaches for Week," *Los Angeles Times*, February 21, 1980, sec. Valley; Marjorie Miller, "Sewage Closes Imperial Beach Oceanfront," *Los Angeles Times*, December 28, 1984, sec. San Diego County; Jane Gross, "Beaches on S.I. and Brooklyn Close as Sewage Hits Harbor," *New York Times*, July 13, 1988.

²³⁶ Thomas Burton and George Papajohn, "Landfill Laws Fail to Do Job," *Chicago Tribune*, December 22, 1987, sec. 1; Mike Ward, "Montebello Fears Impact of Possible Toxic Cleanup From Nearby Dump," *Los Angeles Times*, August 3, 1986, sec. Southeast, <http://search.proquest.com/docview/154830824/abstract/78E6281DEEAE4982PQ/3>; Irene Chang, "EPA Plans More Test Wells Near Toxic Landfill: Pollution," *Los Angeles Times*, November 10, 1991, sec. San Gabriel Valley, <http://search.proquest.com/docview/1645083955/abstract/78E6281DEEAE4982PQ/19>; Suzanne DeChillo, "Fishermen's Group Keeps Pressure on County Over Dump," *New York Times*, August 3, 1986, sec. Westchester Weekly.

²³⁷ Pete Earley, "EPA Says Garbage-Burning May Produce Toxic Chemical," *Boston Globe*, November 24, 1983; Pete Earley, "Dioxin From Garbage Incinerators May Be Polluting Air Around Cities," *The Washington Post*, October 20, 1983; Stevenson Swanson, "City's Incinerator Must Clean up Act," *Chicago Tribune*, December 5, 1993, sec. Southwest, <http://search.proquest.com/docview/1831479653/abstract/86042E8F2E4E40C0PQ/8>; Andrew Pollack, "In Japan's Burnt Trash, Dioxin Threat: Near Incinerators, a Study Finds an Ominously High Infant Death Rate.," *New York Times*, April 27, 1997, sec. International.

²³⁸ Maria Kaika, *City of Flows; Modernity, Nature and the City* (New York and London: Routledge, 2005).

Sanitary City era, while supporting the underlying processes of production and consumption that continued to both exploit nature as a sink for wastes and as a source for raw materials.

Waste as pollution in practice

The first key characteristic of the pollution-framing of waste is the explicit link that is forged in public discourse between the overflow of waste and a system of consumption gone haywire. In addition, waste also began to be understood as a material whose management had consequences for ecosystems and non-human species, and perhaps even more consequentially, a phenomenon whose effects were unevenly distributed across human populations. Waste-as-pollution positions waste within a larger environment; no longer is waste viewed, as it was in the Sanitary City era, as an urban problem with limited consequences for health and economic development, but it is viewed as problematic product of a consumption-driven economy and as a dangerous material with a specific spatial footprint in an unequal society. In so doing, the pollution frame implicates individuals much more directly than the aesthetic and public health frames. On the one hand, in the waste-as-pollution frame, people are victims of waste, as they were in the sanitary city, and also of a wasteful system. But people, as consumers, are cast as both the cause and the solution to the problem of waste as pollution.

Litter, Keep American Beautiful, and the Collision of Problem Frames

The context of post-World War II America was vastly different from the rise of sanitation in early American industrial cities. For the most part, public services like sewage and waste collection could be taken for granted. The country was rapidly suburbanizing, a new consumer economy was driven by wartime manufacturing capacity, and a variety of new materials and products that were

reoriented to fill and maintain suburban households.²³⁹ The characteristics of waste materials were changing as well; instead of mostly organic material, trashcans were now filled with a newly invented material that never degrades—plastic. And, new products were full of repurposed, post-war chemicals and compounds, some toxic.²⁴⁰ Disposable products were celebrated as time-saving, modern conveniences.²⁴¹ But to many, the wildly increasing volumes of garbage were cause for alarm, particularly when the visual impacts of litter began to seep into the public consciousness.²⁴²



Throwaway Living

DISPOSABLE ITEMS CUT DOWN HOUSEHOLD CHORES

The objects flying through the air in this picture would take 40 hours to clean—except that no housewife would bother. They are all meant to be thrown away after use. Many are new; others, such as paper plates and napkins, have been around a long time but are now being made more attractive.

At the bottom of the picture, to the left of a New York City Department of Sanitation trash can, are some throwaway saucers and flowers, poppers that pop in their own pans. Moving clockwise around the photograph come assorted frozen food containers,

a checkered paper napkin, a disposable diaper (seriously suggested as one reason for a rise in the U.S. birth rate) and, behind it, a baby's bath. At top are throwaway water wings, food pans, paper tablecloth, guest towels and a sectional plate. At right is an all-purpose basket and, scattered throughout the picture, paper cups for beer and highballs. In the basket are throwaway draperies, ash trays, garbage bags, hot pads, mats and a feeding disk for dogs. At the base of the basket are two stems for hunters, to throw away disposable game and duck decoys.

©1955 LIFE

Figure 3.1. "Throwaway Living," 1955 Life Magazine Feature, extolling the benefits of disposable household products for the Modern Family.

²³⁹ Dolores Hayden, *Redesigning the American Dream: The Future of Housing, Work, and Family Life* (New York: W.W. Norton, 1984).

²⁴⁰ Martin V. Melosi, "The Cleaning of America," *Environment* 23, no. 8 (October 1981): 6; William Rathje and Cullen Murphy, *Rubbish! The Archeology of Garbage* (Tucson, Arizona: The University of Arizona Press, 2001); Strasser, *Waste and Want: A Social History of Trash*.

²⁴¹ Life, "Throwaway Living," *Life*, August 1, 1955.

²⁴² Packard, *The Waste Makers*; Harrison E. Salisbury, "City Wages Constant Battle to Keep Streets Litter-Free," *New York Times*, December 6, 1954; Harrison E. Salisbury, "Litter Increased in Crowded Cities," *New York Times*, December 7, 1954.



Every litter bit hurts **YOU**

Trash? Litter? Embarrass? Don't leave them overboard! Carry a litterbag in your boat. Hold everything for the first trash container on shore or take it home for proper disposal. Remember—our waterways belong to all of us. Litter pollutes the waters, fouls propellers, spoils fishing fun and costs tax dollars. Every litter bit hurts. YOU America's beauty is your duty. Please help!



KEEP AMERICA BEAUTIFUL



With disposability came litter. In some camps, litter was viewed as urban pollution that required more public investment to clean up. In a series of articles in the *New York Times*, one reporter argued that the only way to reduce the “amazing” quantities of litter would be to increase public spending on sanitation.²⁴³ In other words, the solution lay where it had in the 19th century: with the removal of wastes by the municipal government.

But others looked beyond municipal clean up. Groups of activists shifted attention away from the city governments and began to argue that the very existence of disposable products was the cause of the new scourge of litter, and thus the solution was to outlaw them. Vermont, stunned by the cost of cleaning roadside litter, and encouraged by concerned farmers, banned the sale of beer in disposable containers in 1953.²⁴⁴ This policy situated the problem of waste as collective, public, and caused by a new form of consumer product

Figure 3.2 “Every Litter Bit Hurts;” 1961 KAB Print Ad. Source: Google Images

²⁴³ Salisbury, “City Wages Constant Battle To Keep Streets Litter-Free.”

²⁴⁴ Peter Franchot, “Bottles and Cans: The Story of the Vermont Deposit Law” (The National Wildlife Federation, 1978), http://vnrc.org/wp-content/uploads/2012/08/Bottes-and-Cans_the-story-of-the-vt-deposit-law.pdf.

that could be eliminated at its source. From New York City to Vermont, litter had emerged as a public problem with impacts on economic productivity, civic image, and enjoyment of the environment—whether urban or rural.

The discourse around litter incorporated some elements of the waste-as-aesthetic-problem frame. For the most part, litter was a visual nuisance that suggested disorder. But the Vermont law incorporated new angles, including waste as a consumption problem, and even more radically, waste as a production problem. It is not surprising that the bottling industry, along with a cluster of related corporate interests, did not like Vermont’s framing. As predicted by problem framing theory, a group of industrial interests organized to contest it. The result was Keep America Beautiful (KAB), a national non-profit devoted to the reduction of litter.²⁴⁵ Crucially, while the ultimate goal of litter reduction was shared across the spectrum of interests, the problem definition

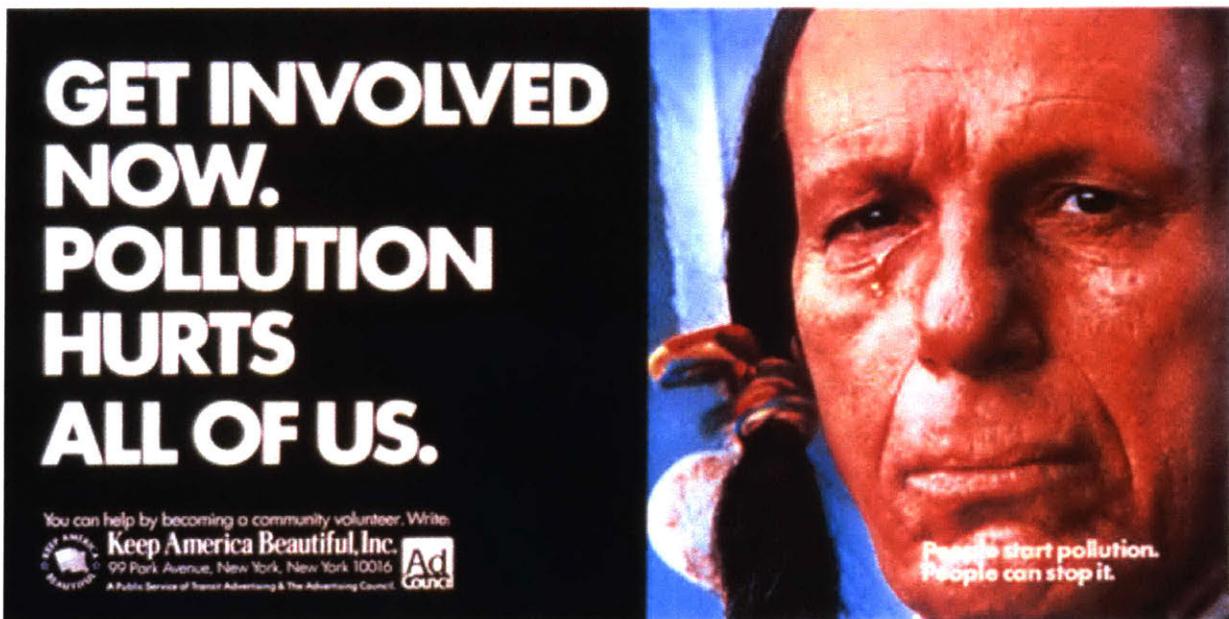


Figure 3.3 Print version of KAB’s famous “crying Indian” ad. The text on the face reads: “People start pollution, people can stop it.”

²⁴⁵ Heather Rogers, *Gone Tomorrow; The Hidden Life of Garbage* (New York and London: The New Press, 2005).

was quite different across groups. The problem, as defined by KAB, was irresponsible consumer behavior.²⁴⁶

In a television ad produced by KAB, a man with two long braids, dressed in leather, beads and feathers, presumably Native American, canoes down a waterway to a dramatic soundtrack of drums and strings. As he paddles, the camera pans to bits of plastic and paper in the water, and then zooms out to reveal a riverside built up with factories billowing smoke, making a direct link between litter and more traditional forms of pollution. The camera cuts back to the man pulling his canoe up on a shore amid piles of garbage. A gravelly, male voice tells us: “Some people have a deep abiding respect for the natural beauty that was once this country...” The camera then cuts to someone throwing what looks like the detritus from a take-out meal out of their car window, and the voice continues “...And some people don’t.” The camera zooms in as the Indian man turns his face to us, revealing a big tear rolling out of his eye, as the narrator intones: “People start pollution. People can stop it.”

In this television ad, and the print ads (see Figure 3.3) that came from it, KAB constructed pollution (litter) and purity (a pre-urbanized nature). The ads also, in the manner of clever problem-framers, designate a responsible party for both the case and the solution to the problem. People who throw their disposable packaging in the wrong place are to blame for the problem of garbage pollution. By simply by throwing their trash in the right place, people can protect pristine nature (which presumably exists away from the landfills and incinerators that will receive trash thrown in the right place) and solve the problem of garbage pollution. In more direct attempts to

²⁴⁶ Thomas Barnes, “Framing Postwar Litter: The Photojournalism of Fenno Jacobs and Keep America Beautiful’s Public Service Announcements,” *Photography and Culture* 6, no. 2 (July 1, 2013): 175–92, doi:10.2752/175145213X13606838923273.

change behavior, KAB-sponsored campaigns from the 1950s and '60s that featured slogans like “every litter bit hurts” and “don’t be a litter bug,” that explicitly admonished people to put garbage in its place.

Disposable bottles, profligate plastic packaging, and more importantly their producers, were notably absent from KAB’s problem framing. The responsibility for solving the litter crisis, rather, lay squarely on American consumers—not anywhere near the manufacturers, bottlers, or sellers of disposable goods. The KAB problem frames *intentionally* obviated the need for more substantial environmental solutions and made the packaging producers look like concerned citizens out to protect the American landscape.

The KAB framing, which came directly from industry spin doctors, was savvy. In advertising like its famous ‘Crying Indian’ spot, the KAB superficially, perhaps even cynically, appropriated the frame of environmentalists. By featuring the images of nature and, in the form of an American Indian, a person closer to nature, the advertisement appeared to carry on the interests of the growing environmental movement. It took on the mantle of waste as pollution. In casting the litterbugs as both the cause and the solution to the problem, however, it actually continued the older tradition of waste as an aesthetic problem. David F. Beard, the head of KAB in the 1960s even echoed the admonition of the women reformers from the century prior: “The bad habits of littering can be changed only by making all citizens aware of their responsibilities to keep our public places as clean as they do their own homes.”²⁴⁷ Unlike the 19th century version of the aesthetic problem, however, which charged municipal governments to arrange for collection and removal of the offensive

²⁴⁷ quoted in Finis Dunaway, *Seeing Green: The Use and Abuse of Environmental Images* (Chicago: University of Chicago Press, 2015), 82.

material, KAB cleverly avoided implicating government at all by shifting responsibility to the consumer. In this way, the campaigns shifted the waste problem out of the public domain entirely.

In the case of litter, the KAB problem frame was victorious in the mainstream. Vermont was the first and only state to succeed in banning disposable bottles, and when the initial law expired in 1957, extensive lobbying by KAB and the beer industry ensured that it was not renewed.²⁴⁸ While several states did succeed in passing bottle deposit bills, which were motivated by the same concern about litter²⁴⁹ recent efforts to expand these laws have floundered. In Massachusetts, organizations like “Real Recycling Massachusetts,” sponsored by many of the same corporations as KAB, mounted a massive media campaign and successfully defeated a recent attempt to expand the state’s bottle bill to include juice and water bottles.

The degree to which the KAB problem framing—trash as visual pollution, with the individual as the responsible party—took hold in the public discourse can be seen in the decades following Vermont’s first attempt to regulate packaging in both the activities surrounding the first Earth Day and in the rise of municipal recycling in 1970. The first Earth Day arose as a result of coordinated environmental activism across the country during the 1950s and 1960s. Gaylord Nelson, a senator from Wisconsin, established the framework for a national teach-in that would take advantage of the grassroots environmental activism happening around the country that had yet to make a dent on the agenda in Washington. Solid waste was one of many forms of pollution on activists’ agendas.

²⁴⁸ Franchot, “Bottles and Cans: The Story of the Vermont Deposit Law”; Finn Arne Jørgensen, “A Pocket History of Bottle Recycling,” *The Atlantic*, February 27, 2013, <http://www.theatlantic.com/technology/archive/2013/02/a-pocket-history-of-bottle-recycling/273575/>.

²⁴⁹ Bartow J. Elmore, “The American Beverage Industry and the Development of Curbside Recycling Programs, 1950–2000,” *Business History Review* 86, no. 3 (2012): 477–501, doi:10.1017/S0007680512000785.

The idea was wildly successful, ultimately culminating in a wide variety of actions across the county, in which some twenty million people participated.²⁵⁰

As part of the momentum that led up to Earth Day, the national consensus about the risks of pollution allowed for the creation of the Environmental Protection Agency and a series of far-reaching federal environmental laws, including the Clean Air Act, the Clean Water Act, and the Resource Conservation and Recovery Act. The work done at this time established the framework for environmental protection and led to dramatic, measurable improvements in industry practice and environmental outcomes in a variety of arenas.²⁵¹ Of course all of these laws were incomplete and imperfect, and they have continued to evolve through new sets of regulations and different cultures of enforcement in the ensuing decades. But despite countless attempts to dismantle the EPA and deregulate industry, this framework has remained more or less intact.²⁵² But even while this brand new regulatory framework was being invented, the regulation of solid waste generation and disposal remained more elusive.

A tension was evident in both Earth Day activities themselves, and in press coverage of the environmental movement. Although litter was understood by many as a visual symbol of a larger

²⁵⁰ Jack Lewis, "The Spirit of the First Earth Day," *EPA Journal* 16 (1990): 12.

²⁵¹ A common critique of the U.S. environmental policy framework has been that it has led to the export of polluting industry. In a comprehensive review of the literature on the "pollution haven hypothesis," as well as a new data set, Brunnermeier and Levinson "Examining the Evidence on Environmental Regulations and Industry Location," *The Journal of Environment & Development* 13, no. 1 (March 1, 2004): 6–41, doi:10.1177/1070496503256500. find this to be the case. Even though many have critiqued the hypothesis (see for example Eskeland and Harrison "Moving to Greener Pastures? Multinationals and the Pollution Haven Hypothesis," *Journal of Development Economics* 70, no. 1 (February 2003): 1–23, doi:10.1016/S0304-3878(02)00084-6. who argue, somewhat problematically, that foreign investment in manufacturing in developing countries results in cleaner and more efficient plants than locally developed manufacturing), it is nevertheless important to recognize that local environmental improvements within U.S. borders has not meant an absolute reduction in pollution globally. Furthermore, it has arguably increased environmental inequality at a global scale and permitted toxic chemicals and practices to continue, even though their harms are well established.

²⁵² Judith A. Layzer, *Open for Business: Conservatives' Opposition to Environmental Regulation* (Cambridge, Mass.: The MIT Press, 2014).

problem, many Earth Day actions simply worked to clear up litter, opting to hide the evidence—a la KAB—rather than trying to change the production and consumption patterns that created it in the first place. News analysis about the impacts of Earth Day on city policy in *The New York Times* noted that “solving the problem of cleaning up the environment has been especially difficult because people are throwing more things away.”²⁵³ This phrasing, which may well have been influenced by the marketing messages from the KAB, embraces the notion that the problem lies with individual consumption and waste habits, not with the production and marketing of more disposable products. The same article, however, goes on to note that Earth Day activists wanted to attack the waste problem at its source by targeting manufacturers of “excessive one-way



Figure 3.4 Pogo, Earth Day Comic Strip; 1971.
 Source: https://en.wikipedia.org/wiki/File:Pogo_-_Earth_Day_1971_poster.jpg

packaging.” In a perfect encapsulation of the tensions, city officials noted that they were interested in pursuing this possibility, but they had run up against resistance from industry which generally claimed that it was simply meeting consumer demand and shouldn’t be penalized for doing so.

Though some factions of more radical Earth Day activists might have been interested in targeting manufacturers, countless Earth Day actions were basically litter clean ups designed to remediate the

visual pollution of litter. Pogo and Porkypine (see Figure 3.4), a popular comic designed by

²⁵³ David Bird, “In the Aftermath of Earth Day: City Gains New Leverage,” *New York Times*, April 24, 1970.

American cartoonist Walt Kelly, famously depicted Earth Day as a time to clean up litter caused by irresponsible people. The article and the Pogo cartoon demonstrate the power and dominance of the KAB framing, and shows why the more radical activists had an uphill battle.

The “Ruse” of Municipal Recycling

Ultimately, KAB and earth day activists did not just promote litter clean up. By the end of the 1970s, long after that initial litter clean up campaigns, KAB continued to position itself as an environmental steward by promoting municipal recycling. Bartow Elmore has shown how KAB and packaging industry groups used the promotion of government-run recycling programs as a way to keep attention away from source-reduction legislation like Vermont’s 1953 bottle law.²⁵⁴

Because early municipal recycling programs were developed alongside KAB and the packaging industries, they focused on the most common materials in packaging. Early municipal recycling programs took paper and metals, and sometimes glass. Only recently have plastics become widely accepted in municipal recycling programs. As Samantha MacBride has shown, the choice of materials was not driven by economic or environmental logics—other materials, like textiles, would make much more sense to recycle than glass, for instance—but these programs did serve the interests of the packaging industries at the time.²⁵⁵

At the same time that KAB was organizing its first campaigns, the waste disposal industry was also undergoing key changes. Small local outfits had been consolidating for some time, and by the mid-1950s, the waste disposal sector had become an organized industry with massive annual profits,

²⁵⁴ Elmore, “The American Beverage Industry and the Development of Curbside Recycling Programs, 1950–2000.”

²⁵⁵ MacBride, *Recycling Reconsidered: The Present Failure and Future Promise of Environmental Action in the United States*.

lobbying capacity, significant power in local waste management planning, and its own views about garbage. As municipalities and environmental activists showed increasing interest in recycling programs, the industry made token efforts to provide recycling services. Many municipalities that already contracted with companies like Waste Management simply asked them to start recycling rather than turning to the scrap industry or small businesses with recycling expertise. For decades, the big players in the waste industry made only the most cosmetic efforts at providing recycling services while continuing to make fortunes off of landfills and incinerators.²⁵⁶ Meanwhile, the marketing industry was cleverly designing advertisements glamorizing convenience and disposability,²⁵⁷ manufacturers were pumping out increasing arrays of single-use products, and the companies supporting the KAB continued to look like heroes for promoting environmental action.

At the same time, KAB and the waste industry, and a growing industry around green consumption used recycling to promote individual environmental action. They promoted recycling as the ethical and responsible choice for consumers, creating a strong narrative of environmental citizenship through recycling. By recycling, consumers were absolved of any responsibility for their consumption choices, taking KAB's early admonitions not to litter a step further. Timothy Luke, presaging a host of more recent critiques, has called this phenomenon "the ruse of recycling."²⁵⁸

²⁵⁶ Louis Blumberg and Robert Gottlieb, *War on Waste: Can America Win Its Battle with Garbage?* (Island Press, 1989); Adam S. Weinberg, David N. Pellow, and Allan Schnaiberg, *Urban Recycling and the Search for Sustainable Community Development* (Princeton, NJ: Princeton University Press, 2000).

²⁵⁷ Edd de Coverly et al., "Hidden Mountain The Social Avoidance of Waste," *Journal of Macromarketing* 28, no. 3 (September 1, 2008): 289–303, doi:10.1177/0276146708320442.

²⁵⁸ Timothy W. Luke, *Ecocritique: Contesting the Politics of Nature, Economy, and Culture* (Minneapolis: University of Minnesota Press, 1997); See also: MacBride, *Recycling Reconsidered: The Present Failure and Future Promise of Environmental Action in the United States*; Liboiron, "Solutions to Waste and the Problem of Scalar Mismatches"; Liboiron, "Against Awareness, For Scale."

The litter crisis, the battle for problem framing, and early beginnings of municipal recycling as a solution challenged some of the key premises of the Sanitary City Waste Regime. First, the discourse of garbage as pollution expanded the landscape of potential harms from public health and the aesthetics of the urban environment to the natural environment more broadly. The pollution frame implicated ecosystems and highlighted the interconnectedness of human and environmental systems. To combat the potential that these worries might lead to regulations that discouraged consumption, the KAB, the waste industry, and allied industries promoted problems frames that placed individuals, rather than governments, as the responsible parties for solving the problems of garbage. By recycling or not littering, garbage could remain out of sight, and business could carry on as usual. These new elements continued to shape waste discourse as a new crisis emerged.

A Garbage Crisis in America? Industry and Alternative Responses to the Faltering Sanitary City Regime

By the mid-1980s, concerns about the scourge of litter started to be accompanied by broader concerns about a garbage crisis in America. The nation plunged into panic as landfill capacity dwindled in one city after another, and it started to look as if the country would literally drown in trash. Nationwide, landfills accommodated over 80% of household waste; but capacity was waning, with particular rapidity on the densely populated coasts. In 1988, the EPA anticipated that 70% of the nation's landfills would be closed within 15 years,²⁵⁹ and new landfills were proving difficult to site. The infamous voyages of the *Mobro* and the *Khian Sea*—the first a garbage scow that sailed from New York down the coast and around the Caribbean searching in vain for a port that would accept the metropolis's waste and the second which illegally deposited a load of toxic incinerator

²⁵⁹ US EPA, "The Waste System."

ash from Philadelphia on a Haitian beach²⁶⁰—became national symbols of a future drowned in trash. Headlines in newspapers across the country trumpeted news of an imminent, nationwide, garbage crisis.²⁶¹

Even at the time, some suggested that “the crisis” was a lack of good information about landfill capacity and waste generation rather than a legitimate shortage in waste disposal capacity.²⁶² In retrospect, many have argued that the crisis was overblown; by the mid-1990s, it had largely dissipated. Trash was once again disappearing from cities with seemingly little effort. Martin Melosi has argued that the “crisis” framing, whether legitimate or not, “denies the complexity of the problem and ignores its persistence over time, failing to question whether it is chronic, recurrent or temporary.”²⁶³ The garbage crisis of the mid-1980s was certainly a node on a long and complex trajectory that involved a lack of good data. But it nevertheless constituted an immediate and expensive dilemma for city leaders across the United States.

Each city that confronted a landfill capacity shortage in the 1980s faced its own unique landscape of infrastructural, political, and fiscal constraints, and some may even have cynically used the crisis

²⁶⁰ Blumberg and Gottlieb, *War on Waste*, 4; Martin V. Melosi, *The Sanitary City; Environmental Services in Urban America from Colonial Times to the Present*, Abridged Edition (Pittsburgh, PA: University of Pittsburgh Press, 2008), 240; Rogers, *Gone Tomorrow; The Hidden Life of Garbage*, 200.

²⁶¹ Josh Barbanel, “Garbage Crisis: After Landfills, What?: Garbage Crisis: After Landfills, What? Counties Ponder Disposal Problem,” *New York Times*, April 2, 1978, sec. New Jersey Weekly; Bruce Keppel, “Dump Closes Down as ‘Garbage Crisis’ Looms,” *Los Angeles Times*, January 2, 1981, sec. Part II; “The Coming Garbage Crisis,” *Chicago Tribune*, January 11, 1986, sec. 1; Edward Hudson, “Garbage Crisis: Landfills Are Nearly Out of Space,” *New York Times*, April 4, 1986, sec. Metro; Joshua Gordon and Takoma Park, “The Municipal Garbage Crisis,” *The Washington Post*, December 24, 1987; Iver Peterson, “Mounds of Garbage Signal Landfill Crisis in Jersey,” *The New York Times*, April 16, 1987; Philip Shabecoff, “With No Room at the Dump, U.S. Faces a Garbage Crisis,” *The New York Times*, June 29, 1987, sec. U.S., <http://www.nytimes.com/1987/06/29/us/with-no-room-at-the-dump-us-faces-a-garbage-crisis.html>; Peg McDonnell Breslin, “Garbage Crisis,” *Chicago Tribune*, January 31, 1988, sec. Section 4; Oldenburg, “Garbage! America Faces a Growing Crisis of Volume”; Martin Zimmerman, “Garbage Crisis Offers No Easy Solutions,” *Los Angeles Times (1923-Current File)*, November 1, 1989.

²⁶² Patricia Poore, “America’s ‘Garbage Crisis’: A Toxic Myth,” *Harper’s Magazine* 288, no. 1726 (March 1994): 24; William L. Rathje, “Rubbish!,” *The Atlantic*, December 1989.

²⁶³ Melosi, *The Sanitary City; Environmental Services in Urban America from Colonial Times to the Present*, 241.

framing to promote industry interests at the expense of local welfare. But city to city, the general contours of the problem and its potential solutions were fairly consistent. As consumption increased and waste became more permanent, it had also become more difficult to site new disposal infrastructure. Citizen groups, in the wake of nationally-reported environmental catastrophes like Love Canal, had become more effective at organizing against proposed landfills and incinerators. As older landfills closed, new ones were slow to emerge.²⁶⁴

EPA, Environmental Regulation, and the closing of landfills

Increases in the volume and toxicity of waste and the difficulty of constructing new disposal facilities were important parts of the crisis facing urban waste managers in the 1980s, but other factors also contributed. Some municipal landfills were simply reaching capacity after decades in service. Many cities devised new dumping and fill patterns to extend the lives of landfills scheduled to be closed.²⁶⁵ But many disposal facilities—both landfills, and outmoded incinerators—were also shuttered as a result of new federal regulations that recognized for the first time the many hazards posed by disposal infrastructure. The regulations begin to treat garbage as a potential pollutant, but also started to deal with water and air pollution that was resulting from waste disposal activities. In tension with the KAB positioning of garbage as an individual problem, a new regulatory framework created for the first time a role for the Federal Government in managing garbage. The regulatory framework added a layer to the changing American waste regime. Though still hidden from sight, the new regulations institutionalized the waste as pollution frame.

²⁶⁴ Kenneth A. Gould, Allan Schnaiberg, and Adam S. Weinberg, *Local Environmental Struggles: Citizen Activism in the Treadmill of Production* (Cambridge, UK: Cambridge University Press, 1996), 136; Melosi, *The Sanitary City; Environmental Services in Urban America from Colonial Times to the Present*, 246; Garrick E. Louis, “A Historical Context of Municipal Solid Waste Management in the United States,” *Waste Management and Research* 22 (2004): 306–22.

²⁶⁵ Martin V. Melosi, “The ‘Garbage Crisis’ and the Weight of History,” *Journal of Urban Technology* 1, no. 3 (1994): 1–20.

The first national solid waste law was passed in 1965. The Solid Waste Disposal Act (SWDA) was passed as an amendment to the Clean Air Act, and was a reaction to the growing recognition of the human health and environmental risks associated with open burning in dumps, and unmonitored solid waste combustion in out-of-date incinerators. The Act, initially under the purview of U.S. Public Health Service (USPHS), focused on encouraging new technologies for disposal solutions, and increasing capacity for waste planning at the state level. A handful of demonstration projects were spurred by the Act. In response to incentives and pressure, states began to form agencies responsible for solid waste planning. The Act was significant as the first federal framework for municipal waste, but it was incomplete in its assessment of solid waste as an issue, and limited strictly to disposal.²⁶⁶

In 1970, congress replaced the SWDA with the Resources Recovery Act, a more comprehensive framework both to address urgent pollution problems associated with solid waste disposal, and to establish alternative priorities for solid waste management. The Act prohibited open dumping, essentially requiring sanitary landfilling for all wastes deposited on land. The statute, which was substantially revised as the Resource Conservation and Recovery Act (RCRA) in 1976, established programs to promote regional waste planning, resource recovery, recycling and waste reduction.²⁶⁷ In so doing, the RCRA formalized the messages coming from environmental activists. Through regulation, it connected the issues of production, consumption, and waste, and provided a new framework for managing waste differently.

²⁶⁶ Melosi, *Garbage in the Cities: Refuse, Reform, and the Environment*, 201; Melosi, *The Sanitary City: Environmental Services in Urban America from Colonial Times to the Present*, 207–9.

²⁶⁷ US EPA, “New Law to Control Hazardous Wastes, End Open Dumping, Promote Conservation of Resources,” December 13, 1976, <https://www.epa.gov/aboutepa/new-law-control-hazardous-wastes-end-open-dumping-promote-conservation-resources>.

The law was implemented narrowly, however. The recycling and waste reduction components were never fully implemented. The regional planning requirement was eventually folded up into state planning, leaving municipalities as the main agent for waste planning and management, as they had been since the rise of the Sanitary City.

RCRA did, however, serve as a successful framework for eliminating open dumping. Landfills, which had routinely accepted both household and hazardous waste, were leaching horrendous toxins into drinking water supplies around the country. By the end of the 1980s, almost half of the country's Superfund sites were former municipal landfills.²⁶⁸ Enforcement of Subtitle D of RCRA led to a spate of landfill closures across the United States. By 1980, the year the provisions took effect, the number of operating landfills had declined 50% from 1976.²⁶⁹ While sanitary landfills—landfills constructed with impermeable liners to prevent leachate from contaminating surface and groundwater—were permitted under the act, this capacity did not immediately materialize. Municipalities around the U.S. saw their local landfills close, and could find no local or regional site for a new one.

Integrated solid waste management and frame expansion in technical discourse.

By the time RCRA was passed, the EPA had a bustling solid waste office with dozens of staff who were researching and providing policy guidance on a number of garbage-related issues. In the summer of 1976, the EPA released a short position statement on the management of hazardous waste. They proposed a hierarchy, which they argued was equally applicable to non-hazardous wastes, that prioritized waste reduction above all. They then recommended a series of other

²⁶⁸ Jacqueline Vaughn, *Waste Management*, Contemporary World Issues (Santa Barbara, CA: ABC-CLIO, 2009), 52.

²⁶⁹ Louis, "A Historical Context of Municipal Solid Waste Management in the United States," 317.

activities such as consolidation and trade, and then finally treatment and disposal only for those material for which there was no other option.²⁷⁰ But more than a decade later, the EPA released an 80-page report on the nation's "Solid Waste Dilemma" and noted that despite the framework for prioritizing reduction and reuse, existing solid waste systems still discourage recycling. The report proposed a framework of "integrated waste management" in which source reduction, recycling, incineration with energy recovery, and landfilling are used as a complimentary components of a comprehensive waste management system.

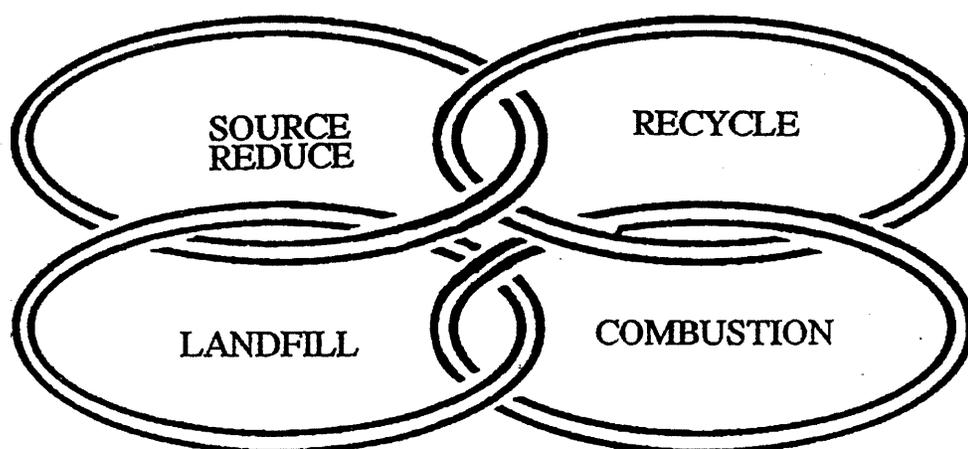


Figure 3.5 *Integrated Solid Waste Management Diagram.* Source: US EPA's 1989 Report, "The Solid Waste Dilemma: An Agenda for Action" (p. 17).

The report did suggest that components should be understood hierarchically, with source reduction as the most important, then recycling, then energy recovery, and finally landfill, but proposed that each community should assess its own context and choose the balance of elements accordingly.²⁷¹

The EPA proposed this framework to guide local planning for waste management. But they argued quite bluntly that municipalities were not alone in being responsible for solving the garbage crisis.

²⁷⁰ US EPA, "Effective Hazardous Waste Management (Non-Radioactive); Position Statement," *Federal Register* 41, no. 161 (August 18, 1976): 35049–51.

²⁷¹ US EPA, "The Solid Waste Dilemma: An Agenda for Action."

“Who is responsible?” the report asks. The answer is straightforward: “WE ALL ARE.” The EPA argues that industry should consider disposal and recyclability in product and packaging design and that consumers should educate themselves about what is recyclable and choosing products accordingly; the waste industry must help plan and implement ISWM in the communities where they work; and all levels of government must assist with planning, providing guidance, and developing supportive policy frameworks.²⁷² This direct call to action is a complete reframing of the Sanitary City emphasis on municipal governments—and yet, it is key to note that it, in keeping with the KAB framing—views citizens primarily as consumers. Their role is buy things that are recyclable, not to stop buying things.

Integrated Solid Waste Management (ISWM) caught on. It promised to transform solid waste management practice to fulfill the goals of sustainable development broadly, a concept that had recently emerged as a global priority,²⁷³ and to address environmental concerns of waste disposal specifically.²⁷⁴

Throughout the 1990s, discourse around ISWM dominated the technical literature in waste management, and was institutionalized in state and local solid waste plans around the United States and Europe. Initially, as adopted and institutionalized in the waste engineering field, ISWM emphasized increasing the efficiency and connectedness of the various segments of the municipal

²⁷² Ibid., 20.

²⁷³ Gro Harlem Brundtland and World Commission on Environment and Development, *Our Common Future: Report of the World Commission on Environment and Development* (Oxford University Press, 1987).

²⁷⁴ Marjorie J Clarke, Adam D Read, and Paul S Phillips, “Integrated Waste Management Planning and Decision-Making in New York City,” *Resources, Conservation and Recycling* 26, no. 2 (May 1, 1999): 125–41, doi:10.1016/S0921-3449(99)00004-X; Mushtaq Ahmed Memon, “Integrated Solid Waste Management Based on the 3R Approach,” *Journal of Material Cycles and Waste Management* 12, no. 1 (April 18, 2010): 30–40, doi:10.1007/s10163-009-0274-0; P. White, M. Dranke, and P. Hindle, *Integrated Solid Waste Management: A Lifecycle Inventory*, First Edition (London: Chapman and Hall, 1995).

waste management process, including source separation, collection, transportation, treatment, and disposal.²⁷⁵ But it was quickly reframed in professional waste management discourse to explicitly incorporate concerns about the environmental impacts of waste management. One textbook for sanitary engineers on ISWM argues that society now demands more than the traditional protection of health and safety: “as well as being safe, waste management also need to look at its wider effects on the environment.”²⁷⁶



Figure 3.6 Waste Management Hierarchy.
Source: epa.gov

this, ISWM emphasized planning²⁷⁸ and promoted a variety of techniques including reduction, recycling, energy recovery and disposal, to manage municipal solid waste, because “no single method of waste disposal can deal with all material in waste in an environmentally sustainable way.”²⁷⁹

The EPA soon updated its initial ISWM diagram, and began to present the ‘waste hierarchy’ (Figure 3.6) as an inverted triangle to graphically represent the proportions of the waste stream that should be handled by each technique. ISWM became an approach that aimed “to minimize the quantity of waste requiring disposal and to [maximize] recovery of material and energy from waste.”²⁷⁷ To achieve

²⁷⁵ George Tchobanoglous, Hilary Theisen, and Samuel Vigil, *Integrated Solid Waste Management: Engineering Principles and Management Issues* (McGraw-Hill, 1993).

²⁷⁶ White, Dranke, and Hindle, *Integrated Solid Waste Management*, 1.

²⁷⁷ Memon, “Integrated Solid Waste Management Based on the 3R Approach,” 31.

²⁷⁸ Memon, “Integrated Solid Waste Management Based on the 3R Approach”; US EPA, “What Is Integrated Solid Waste Management?,” May 2002, <http://www.epa.gov/climatechange/wywd/waste/downloads/overview.pdf>.

²⁷⁹ White, Dranke, and Hindle, *Integrated Solid Waste Management*, 11.

As ISWM entered the technocratic field of waste engineering, it lost some of its initial positioning. In the engineer's view, "Environmental concerns about the management and disposal of waste can be divided into two major areas: conservation of resources and pollution of the environment."²⁸⁰ Both of these discrete issues could be addressed through better stewardship of materials through their lifecycles, and better disposal practices. The emphasis on planning, recycling, energy recovery and disposal maintains responsibility for waste management in the local public sector²⁸¹ with the support of the private sector, to the extent that the private sector would likely be building and operating much of the necessary infrastructure. The questions of individual responsibility raised by KAB, and reinforced by the EPA's framing, are evaded in the waste engineer's technocratic version of ISWM. As translated and taught through engineering texts, ISWM maintains the central role of engineers and municipal waste managers, while responding to contemporary problem frames.

ISWM was promoted broadly through professional waste management networks and gained widespread traction in solid waste policy in the United States and around the world. Many U.S. states and municipalities developed ISWM plans, the most aggressive of which was California law AB 939, the "Integrated Waste Management Act." This law set binding waste diversion targets for California municipalities, and required all cities and towns to prepare integrated waste management plans.²⁸² While the programs have had a remarkable impact in California, critics have questioned their ability to substantively transform waste generation and management practices. In particular,

²⁸⁰ Ibid., 3; see also Memon, "Integrated Solid Waste Management Based on the 3R Approach," 30.

²⁸¹ O.P. Kharbanda and E.A. Stallworthy, *Waste Management: Towards a Sustainable Society* (New York, Westport, CT., London: Auburn House, 1990); Memon, "Integrated Solid Waste Management Based on the 3R Approach."

²⁸² CalRecycle, "California Solid Waste Law, 1985-1989," *California Department of Resources Recycling and Recovery*, accessed March 24, 2016, <http://www.calrecycle.ca.gov/laws/legislation/calhist/1985to1989.htm>.

California's ISWM programs largely ignore waste prevention, and still ultimately rely on landfilling for the bulk of solid waste.²⁸³

Outside of California, ISWM programs have made even less progress beyond the Sanitary City paradigm of collection and removal. Engineering textbooks on ISWM provide some clue as to why. White et al., for example, suggest that

'Waste minimization,' 'waste reduction' or 'source reduction' are usually placed at the top of the conventional waste management hierarchy. In reality, however, source reduction is a necessary precursor to effective waste management, rather than a part of it. Source reduction will affect the volume, and to some extent, the nature of waste, but there will still be waste disposal. What is needed, beyond source reduction, is an effective system to manage this waste.²⁸⁴

In other words, while source reduction may be the most important ingredient of ISWM, it is outside the scope of engineering. Instead of a triangle, the textbook provides a bullseye diagram that only includes various recycling and disposal options, each with equal emphasis (see Figure 3.7).

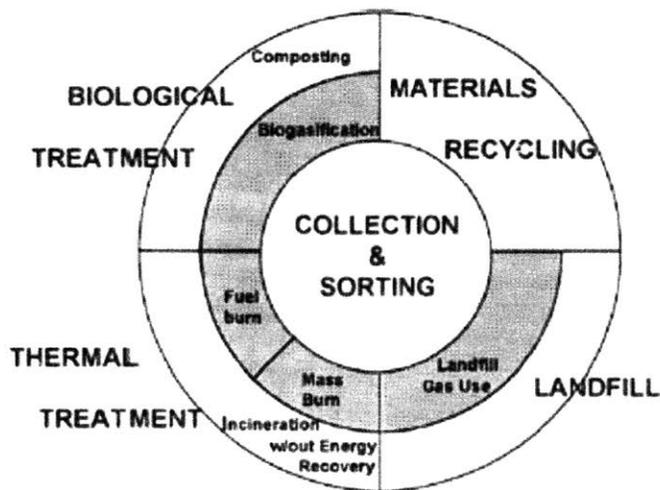


Figure 3.7 ISWM model from a popular textbook. Source: White et al., 1997.

²⁸³ Anonymous, "Integrated Waste Management under the Microscope," *BioCycle* 39, no. 9 (September 1998): 8.

²⁸⁴ *Integrated Solid Waste Management*, 14.

Municipal waste managers, the text argues, are only responsible for the material designated as waste; thus the activities higher on the hierarchy that are intended to divert material from the waste stream, are not actually in the purview of waste managers. Explicitly grounded in a rational-scientific worldview, the engineer-devised version of ISWM seeks to increase the efficiency of *disposal practices* by recovering material and energy through economically-viable means.

ISWM in practice reinforces one of the principal messages of KAB. Recycling is a valuable and legitimate way to cope with the problem of too much waste in the environment. The work of ISWM practitioners and KAB lobbyists was to keep waste invisible—that is to remove it from all the places it didn't belong—and to leave processes of production and consumption alone. This goal is fundamentally in sync with the Sanitary City Waste Regime's goal of the collection and removal of wastes from cities. However, the inclusion of recycling in municipal waste programs required a new practice on the part of individuals. Not only were people not to litter, but in places where recycling was available, they now had to take extra care to separate waste materials into multiple bins. This engagement of citizens is a fundamental shift from the Sanitary City Waste Regime, albeit a relatively insignificant one in terms of the actual environmental impacts of recycling. Now not victims of waste, but part of its cause and part of its solution, citizens have a new role.

In the wake of the environmental activism of the 1960s and 70s, the new environmental regulatory framework implemented by the EPA, and the development of a new approach to municipal waste management in the guise of ISWM, a new American waste regime emerged—the Weak Recycling Waste Regime. This regime still depends on rapid and efficient disposal, or the disappearing, of garbage. But in the new regime, garbage is a product of consumption and citizens are obliged to

participate more actively in the disappearing act by throwing the right materials into the right places. Finally, in a key shift from the Sanitary City Waste Regime in which government-provided service was the gold-standard of a well-functioning city, in the Weak Recycling Waste Regime, the waste management industry is a powerful and necessary partner to the government in the orchestration of the waste management.

“Zero Waste:” Radical reframing?

ISWM became widespread throughout the 1990s and 2000s in U.S., and is largely credited with the development of curbside recycling programs around the country. Although by no means universal, nearly all large cities in the U.S. offer some kind of recycling program.²⁸⁵ However, environmentalists, well aware of the critiques of recycling addressed in the previous section, have not been satisfied with ISWM as a sufficient solution to garbage as pollution, and have pushed the redefinition of the problem of garbage further.

By the 1990s, popular social and cultural critiques of garbage had almost become a literary sub-genre unto themselves. Building on Vance Packard’s dystopian view of a garbage society in *The Waste Makers*, Alvin Toffler’s *Future Shock* presented a world in which which ‘man-thing relations’ became increasingly ephemeral to the point of chaos.²⁸⁶ Around the same time, Jerome Goldstein, who eventually founded the journal *BioCycle*, published a *Garbage as You Like it*, which presented a plan to rescue organics from the waste stream and stem the tides of pollution from trash.

Goldstein’s book made it through four editions between 1969 and 1971, a clue to the receptive

²⁸⁵ Ben-Joseph et al., “Solid Waste Management and Sustainable Consumption: A Survey about Municipal Practices in the U.S.”

²⁸⁶ Packard, *The Waste Makers*; Alvin Toffler, *Future Shock*, 10th edition (New York: Bantam, 1971).

audience it found.²⁸⁷ In 1990, Kevin Lynch's final book, *Wasting Away*, was posthumously published; it was a rumination on the multitudes of wastes that were, in his eyes, coming to define out cities and our society.²⁸⁸ More recent additions to the collection include swashbuckling investigations of waste disposal,²⁸⁹ exposés about the prevalence and problems of plastics,²⁹⁰ several examinations of garbage as a crystal clear portrait of contemporary values and everyday practices²⁹¹ and dozens of how-to books about waste-free living and practices of creative reuse. Over this same period academic investigations of waste have also proliferated, much of which now frames this dissertation, as scholars from myriad definitions have tried to incorporate waste as a substance and an idea into theories about how the world works. What is clear from this broad literature is that a great deal of anxiety remains about the ways that we, as a global market and as unique places, produce and manage garbage.

As discussed in the previous chapter, much of the academic literature on solid waste has attempted either to examine its governance, or to understand it as a socially produced phenomenon. The field of ecological economics, however, has worked to develop theories that problematize the one-way path of natural resources from material extraction through disposal. Our current economic model, ecological economists argue, is based on fiction: endless growth on a finite earth is simply not possible.²⁹² Similarly, using new modeling techniques pioneered by Jay Forrester, Donella Meadows and several colleagues published *Limits to Growth*; a mathematical representation of accelerating

²⁸⁷ Jerome Goldstein, *Garbage as You Like It: A Plan to Stop Pollution by Using Our Nation's Wastes*, 4th ed. (Emmaus, PA: Rodale Books, Inc., 1971).

²⁸⁸ Lynch, *Wasting Away*.

²⁸⁹ Elizabeth Royte, *Garbage Land* (New York, Boston, London: Back Bay Books / Little, Brown and Company, 2005); Rogers, *Gone Tomorrow; The Hidden Life of Garbage*.

²⁹⁰ Susan Freinkel, *Plastic: A Toxic Love Story* (Boston: Houghton Mifflin Harcourt, 2011); Hawkins, Potter, and Race, *Plastic Water*.

²⁹¹ Rathje and Murphy, *Rubbish! The Archeology of Garbage*; John Scanlan, *On Garbage* (London: Reaktion Books, 2005); John Knechtel, ed., *Trash* (Cambridge, MA: MIT and Alphabet City Media, Inc, 2007).

²⁹² Nicolas Georgescu-Roegen, *The Entropy Law and the Economic Process* (Cambridge, Mass.: Harvard University Press, 1971); Andre Gorz, *Ecology as Politics* (London: Pluto Press, 1983).

resource depletion. Building on these traditions, Paul Hawken, Amory Lovins and Hunter Lovins', in *Natural Capitalism*, presented an accessible articulation of this destructive one-way path, its potential consequences, and an alternative vision for society in which material resources are stewarded, reused, and never wasted.²⁹³

Zero Waste (ZW) builds directly on these arguments. ZW proponents define garbage not just as pollution in itself, but rather as the signal of chains of production that cause waste in many forms and in untold volumes at the global scale. ZW theorists and activists adopted this wide-angle problem frame to be able to articulate a new vision for materials management at multiple scales from the individual through global supply chains. The ultimate goal of ZW is the redesign of both products, manufacturing processes, and markets so that all products are deconstructable, reusable, and recyclable, and so that all waste outputs are used as inputs for other process.²⁹⁴ Where the primary concern of ISWM is waste *diversion*, ZW—in theory, at least—shifts attention to waste *prevention*.

ZW is a broad movement, and many thinkers and activists have participated in its shaping. The most widely cited include Paul Hawken, Amory Lovins, and Hunter Lovins, Gretchen Daily, Gary Liss, William McDonough and Michael Braungart, Paul Palmer, and Paul Connett.²⁹⁵ The

²⁹³ Paul Hawken, Amory B. Lovins, and L. Hunter Lovins, *Natural Capitalism: The Next Industrial Revolution* (Boston: Little Brown and Company, 1999).

²⁹⁴ P. H. Connett, *The Zero Waste Solution: Unrashing the Planet One Community at a Time* (White River Junction, Vermont: Chelsea Green Publishing, 2013); William McDonough and Michael Braungart, *Cradle to Cradle: Remaking the Way We Make Things* (New York: Northpoint Press, 2002); Paul Palmer, *Getting to Zero Waste* (Sebastopol, CA: Purple Sky Press, 2005).

²⁹⁵ Gretchen Daily, *Nature's Services: Societal Dependence On Natural Ecosystems* (Island Press, 1997); Gary Liss, "What Is Zero Waste?," *Grass Roots Recycling Network*, November 1997, <http://archive.grrn.org/zerowaste/articles/whatiszw.html>; Hawken, Lovins, and Lovins, *Natural Capitalism: The Next Industrial Revolution*; McDonough and Braungart, *Cradle to Cradle: Remaking the Way We Make Things*; Palmer, *Getting to Zero Waste*; Paul Palmer, "Zero Waste Theory," *The Zero Waste Institute*, September 21, 2009, <http://zerowasteinstitute.org/>; Connett, *The Zero Waste Solution*.

professions claimed by this group of thinkers and advocates includes environmentalist, journalist, biologist, architect, industrial ecologist, entrepreneur, chemist, and educator. This group is constituted almost entirely by older white men, and the expertise they marshal is professional, thus conserving two key sources of power in public discourse. But, their experience and professional orientations represent a different set of skills and worldviews than has traditionally been applied to solid waste problem framing and solving.

The intellectual lineage of ZW does follow from the social lineage of the earlier generations of an elite environmentalism that privileged conservation over social justice,²⁹⁶ a critique that has been similarly leveled against analyses about “overpopulation,” that implies a concern for the wealthier parts of the world, at the expense of others. But despite these links, ZW has been adopted by a much wider array of individuals, organizations, and interests. It has become a key tool in the arsenal of anti-incineration activists, who are frequently operating within an environmental justice framework,²⁹⁷ rather than a traditional environmentalist frameworks that ignore social landscapes and the unequal distribution of environmental burdens. Many ZW advocates also argue that a true zero waste economy will prosper with green jobs,²⁹⁸ thus drawing labor into the pool of allies and proponents. ZW is, according to its advocates, a social, economic, and environmental imperative.

²⁹⁶ Andrew Dobson, “Social Justice and Environmental Sustainability: Ne’er the Twain Shall Meet?,” in *Just Sustainabilities: Development in an Unequal World*, ed. Julian Agyeman, Robert D. Bullard, and Bob Evans (Cambridge, MA: MIT Press, 2003), 83–95; Michael Gelobter et al., *The Soul of Environmentalism: Rediscovering Transformational Politics in the 21st Century* (Oakland, CA: Redefining Progress, 2004), www.rprogress.org; Michael Shellenberger and Ted Nordhaus, *The Death of Environmentalism: Global Warming in a Post-Environmental World*, 2004, www.thebreakthrough.org.

²⁹⁷ Davies, “Incineration Politics and the Geographies of Waste Governance: A Burning Issue for Ireland?,” GAIA, “Principles of Environmental Justice,” *Global Anti-Incinerator Alliance*, accessed April 7, 2016, <http://www.no-burn.org/article.php?id=284>; Christopher Rootes, “Environmental Movements, Waste and Waste Infrastructure: An Introduction,” *Environmental Politics* 18, no. 6 (November 1, 2009): 817–34, doi:10.1080/09644010903345587.

²⁹⁸ Palmer, *Getting to Zero Waste*; Neil Seldman, “Investing in Zero Waste ... and Green Jobs,” *BioCycle* 50, no. 1 (January 2009): 46.

Despite the fact that ZW advocates work from outside the system of solid waste management, the ideas have gained considerable traction in local and state level municipal waste policy. Cities as disparate as Dallas, Minneapolis, Washington D.C., and San Francisco have formally adopted zero-waste goals, as have a number of states from California to Maryland.²⁹⁹ A handful of individuals and households even seem to have successfully implemented a zero-waste life, at least according to some definitions.³⁰⁰ There are also countless zero waste events, and increasingly, zero waste companies and campuses (insert references for ZW initiatives on campuses and ZW businesses).



Figure 3.8 An assortment of Zero Waste logos. Source: Google Images.

²⁹⁹ California Department of Resources Recycling and Recovery, “Zero Waste,” accessed December 1, 2016, <http://www.calrecycle.ca.gov/zerowaste/>; City of Dallas, “Local Solid Waste Management Plan 2011-2060” (Dallas, TX: Sanitation Services Department, February 2013); City of Minneapolis, “Zero-Waste Minneapolis,” accessed December 1, 2016, <http://www.minneapolismn.gov/mayor/ZWM/index.htm>; Rebecca Toews, “DC City Council Embraces Zero Waste Planning,” *Institute for Local Self Reliance*, July 23, 2014, <https://ilsr.org/dc-city-council-embraces-waste-planning/>; City of San Francisco, “SF Environment: Zero Waste,” *Zero Waste: Sending Nothing to the Landfill Is a Forseeable Future*, n.d., <http://sfenvironment.org/zero-waste>; Maryland Department of the Environment, “Zero Waste Maryland: Maryland’s Plan to Reduce, Reuse and Recycle Nearly All Waste Generated in Maryland by 2040” (Baltimore, MD, 2014), http://www.mde.state.md.us/programs/Marylander/Documents/Zero_Waste_Plan_Draft_12.15.14.pdf.

³⁰⁰ See for example: Bea Johnson, “Zero Waste Home,” accessed January 26, 2016, <http://www.zerowastehome.com/p/about.html>; Lauren Singer, “Trash Is for Tossers,” accessed January 26, 2016, <http://www.trashisfortossers.com/p/about.html>.

Because it was developed by thinkers, activists, and scientists outside of the waste management establishment, ZW mobilized knowledge, experiences, and variables far beyond what has been included in past solid waste management movements. This allows the leaders of the movement to challenge waste generation in its full integration with global systems of production and consumption. This strength in theory, however, has proved to be a weakness in practice. In the absence of a central, professionally disciplined set of practices, ZW has given way to a proliferation of interpretations. Every town, event and organization that claims zero waste status in one form or another has its own definition of what this means.

This heterogeneity can be seen in the multitude of logos (Figure 3.8) used advertise zero waste plans and intentions. Logos advertising zero waste status are usually circles, representing both the closed-loop material cycle and the zero, of zero waste. These logos visualize what is happening to Zero Waste as it is translated from radical vision to concrete programs. Some are merely aspirational, emphasizing words like “towards” and “goal”; others just put the old 3-R “reduce-reuse-recycle” model into a circle form.

This watering down of ZW principles is visible also in the content of ZW plans in municipal governments around the country. Samantha MacBride has critiqued San Francisco’s near-zero-waste claims as a counting game;³⁰¹ Pincetl and Murphy exposed the lack of substance in Los Angeles’s zero waste program in article titled “Is the emperor wearing any clothes?”³⁰² Others argue that in practice, municipalities seem to be using zero waste as a framework simply to increase

³⁰¹ MacBride, “San Francisco’s Famous 80% Waste Diversion Rate: Anatomy of an Exemplar.”

³⁰² Sinnott Murphy and Stephanie Pincetl, “Zero Waste in Los Angeles: Is the Emperor Wearing Any Clothes?,” *Resources, Conservation and Recycling* 81 (December 2013): 40–51, doi:10.1016/j.resconrec.2013.09.012.

diversion, without substantively moving forward with *reduction*.³⁰³ For many municipalities, ZW is defined as reducing the amount of waste sent to a landfill to negligibly small quantities; this can mean that municipalities will include incineration for energy recovery as part of a zero waste plan.³⁰⁴ This presents a substantial conflict with the more visionary, radical zero-waste advocates who crusade for an entire reimagining of our production and consumption systems.

For better or worse, zero-waste programs are, for the most part, being implemented by solid waste managers at the municipal level. In other words, solid waste programs are implemented by institutions baked in more traditional models of waste management. As we saw in the way that ISWM was translated and restructured within the discipline of sanitary engineering, and as scholars of infrastructural path dependence have observed, disciplines present an important means of stabilizing practices and knowledge through generations.³⁰⁵ Through curricula and professional organizations, disciplines work against radical transformation, particularly in technical fields. Stephanie Pincetl argues that alternate approaches to infrastructure tend to “[butt] up against the epistemological structuring of disciplines reflected in city agencies that is based on divergent and exclusive framings of each subject and distinctive methods of inquiry and problem solving...”³⁰⁶ and such has been the case with ZW. Even some of the most radical and aggressive municipal ZW plans are still in the care of professional waste managers whose fundamental obligation, often enshrined in municipal regulation, is the collection and removal of municipal refuse. As we shall see

³⁰³ Eric Lombardi, “Zero Landfill Is Not Zero Waste,” *BioCycle* 52, no. 7 (July 2011): 44–45; Jennifer M. Hiser, “Measuring Zero: A Comparative Analysis of Sustainable Waste Management in Los Angeles and New York City” (Masters Thesis, Massachusetts Institute of Technology, 2016).

³⁰⁴ Lombardi, “Zero Landfill Is Not Zero Waste.”

³⁰⁵ Kuhn, *The Structure of Scientific Revolutions*; Konstantinos Chatzis, “Designing and Operating Storm Water Drain Systems: Empirical Findings and Conceptual Developments,” in *The Governance of Large Technical Systems*, ed. Olivier Coutard (London and New York: Routledge, 1999), 73–90; Unruh, “Understanding Carbon Lock-In”; Ben-Joseph, *The Code of the City: Standards and the Hidden Language of Place Making*.

³⁰⁶ “From Sanitary City to the Sustainable City: Challenges to Institutionalizing Biogenic (Nature’s Services) Infrastructure,” *Local Environment* 15, no. 1 (January 2010): 48.

in the following chapters, cracking out of this model requires more than the adoption of ZW plans; and even the places that are closest to a ZW model have struggled to address the reduction side of the problem in meaningful ways.

ZW is broader than municipal policy, though. Many ZW activists promote, as did the KAB problem frame, changes to individual behavior. But unlike KAB, ZW encourages people to fundamentally alter their consumption habits. Lauren Singer, founder of the Simply Co., attests to living a zero-waste life; she posts training video on her website, instructing people in how to make their own laundry soap and toothpaste, how to wash their clothes by hand, how to pack for travel without disposal products, and much more.³⁰⁷ Singer is not alone. Dozens of books, blogs, services, and products are now available—ironically commercializing the field of self-provisioning—to help individuals transition away from consumption-oriented living. These kinds of activities, however transformative they might be if widely adopted, have yet to catch on in the main stream. Given the demands of our current economic organization on individuals and families, most people do not have the time to self-provision.³⁰⁸ Those who have time do not likely have the money to afford the much more expensive zero-waste replacements for conventional products.

These critiques indicate the central challenge of Zero Waste. The theory, developed by a set of experts, albeit not traditional waste engineers, implicate an entire system of production and consumption; the practice, which attempts to make incremental progress in the absence of systemic change, demands behavior changes that at best are idealistic, and at worst are so time consuming that they exclude most people, even those committed to the goal.

³⁰⁷ Singer, “Trash Is for Tossers.”

³⁰⁸ Schor, *Do Americans Shop Too Much?*; Juliet Schor, *Plenitude: The New Economics of True Wealth* (New York: Penguin Press, 2010).

ZW, despite its limited application, nudged the post-sanitary city Weak Recycling Waste Regime. Key players in the shaping of the waste regime have internalized ZW rhetoric, if not action. The EPA now provides a toolkit of 100 policies and programs that can help municipalities move towards ZW. These include many actionable ideas that work to reduce waste and make its composition less toxic. There are many ideas for food waste prevention and for removing food scraps from the disposal stream. Others provide guidance on extended producer responsibility programs that require retailers and manufacturers to take back their products at the end of life, which, in theory, will promote better and less wasteful product design.

The nation's largest waste management corporations have adopted the language of "materials management" to replacing rhetorical emphasis on waste disposal, and many companies offer an array of services to organizations and municipalities that are seeking to go ZW.³⁰⁹ These corporations have also, in recent decades, invested in recycling infrastructure, though they do still make the bulk of profits from incineration and landfill disposal.³¹⁰

The idea of ZW, in all of its myriad interpretations, has thus become a part of the Weak Recycling Waste Regime (WRWR). As it always has, the WRWR still depends on the invisibility of garbage, made possible through rapid and efficient disposal. But now instead of a single destination—the dump—different materials may have different paths. Some will be sorted and recycled, some will be burned to create energy, in a handful of places some may be composted and returned to soil. The

³⁰⁹ Waste Management, Inc., "Zero Waste and Landfill Diversion Goals," *Waste Management, Inc.*, accessed December 2, 2016, <http://www.wm.com/enterprise/federal/federal-solutions/zero-waste.jsp>.

³¹⁰ Bobby Elliott, "Recycling Continues to Pinch Profits for Haulers," *Resource Recycling News*, March 1, 2016, <https://resource-recycling.com/recycling/2016/03/01/recycling-continues-to-pinch-profits-for-haulers/>.

vast bulk will still be buried in a landfill. In the current WRWR, garbage is understood widely to be a product of consumption; while the fringes movements, like the most radical ZW activists take this head on, municipal waste programs, the waste industry, and the orientation of our consumer economy still conspire to persuade citizens that recycling is a substantial and sufficient act of environmental stewardship. And, continuing the shift away from the Sanitary City era of government-provided service, the waste management industry is a powerful driver of service options, infrastructure development, and even rhetoric.

Alternative visions for waste systems

Beyond ISWM, Sustainable Materials Management (SMM), and ZW, scholars from other fields have, from time to time, taken on garbage as a central inquiry. Their observations mirror much of what has already been discussed here, but their proposals are notably different and worth exploring briefly. One such observer was Kevin Lynch, an advocate for cities, systems, and regions that were imageable and navigable to residents using their five senses.³¹¹ Lynch argued that garbage had become an important sensory presence in cities, impacting people's feelings about themselves and their places and thus impacting their behavior. Invoking the spatial lens of the designer, he asserted that waste material cannot simply be thrown away: "there is no longer an 'away.'"³¹² On the other hand, reusing waste materials is also complicated because of the strong, usually negative, feelings people have about waste. Lynch therefore proposed a complete "revision of waste processes and waste perceptions in an effort to deal with the stream as a continuous whole."³¹³

³¹¹ Kevin Lynch, *Managing the Sense of a Region* (Cambridge: MIT Press, 1976); Kevin Lynch, *The Image of the City* (Cambridge, MA and London, England: MIT Press, 1998).

³¹² Lynch, *Wasting Away*, 80.

³¹³ *Ibid.*, 167.

Lynch's proposal offers a skeleton for a re-evaluation of waste system sustainability. Waste systems interventions cannot only treat one piece of the system, but must address the whole cycle, from production through disposal. Further, all participants in the waste stream must be included—not just waste managers, but also people who make things, people who use things, people who throw things away. Lynch offers as an example the rural dump as a model for better waste management. Social, natural, and engineered systems intersect at the dump; the immorality of waste is neutralized by positive social contact with neighbors. Waste, he argues—in an echo of Gille, Hawkins, and the many other social theorists of garbage—is both a natural and a cultural product. But unlike social theorists who do not connect their observations of wastes to normative claims, Lynch tells us that manage waste well will require that we understand its multiple identities.

The core of Lynch's proposal was a reimagining of not just garbage but everything.

Obsessed with purity and permanence, we must learn to waste away, learn to see the continuities in flux, the trajectories, the unfoldings. These traces give us a present hold on the past and the future as unmoving unmixed things do not. . . Effervescent or glacial, everything changes. Life is growth and decline, transformation and elimination. We might learn to take please in that to maintain our continuity.³¹⁴

For Lynch this mean not that things should be made to last forever, but rather that recognition of decline should be recognized in design. This was true for buildings and cities as much as consumer projects. This provocation has been echoed more recently by Joshua Reno who has proposed a radical reframing of waste as a signal of vital life processes rather than a symbol of death and decay.³¹⁵ The outcome of these reframings might just liberate us from the anxieties about wastefulness that we carry as individuals and as a society.

³¹⁴ Lynch, *Managing the Sense of a Region*, 201.

³¹⁵ Reno, "Toward a New Theory of Waste."

Following from the Lynchian tradition, ecological urbanists reunite concepts and systems that under the modernist paradigm were understood as distinct. In particular, they challenge ontological separation of city and nature that characterizes modernist urban infrastructure. Mira Engler, a landscape designer in the ecological urbanist tradition, provides a concrete example of the kind of environmental and infrastructural opportunities embedded in ecological urbanism with regard to waste management. She explores the design of waste management facilities. She particularly emphasizes the transition from pre-modern (open dumping), to modern (scientific, positivist, technocratic, and marginalized—the sanitary landfill), to post-modern, experimental waste-site designs that emphasize the dialectic nature of margin and center, waste and waster. While this has been an important evolution, she argues for a further transformation towards a “super-modern” approach to waste facilities. She advocates for de-emphasizing the otherness of waste and waste-space by normalizing and decentralizing waste treatments facilities.³¹⁶

City-dwellers can learn to have unencumbered daily interactions with waste material and waste management processes if waste treatment becomes an everyday part of the urban landscape. Though as yet unbuilt—except perhaps in the rural dumps admired by Lynch—this approach offers a way to radically transform waste management. Decentralizing treatment facilities into neighborhoods would also transform the politics of pollution by creating a much wider coalition of people interested in environmentally sound waste treatment practice. This approach challenges modern and post-modern conceptions of infrastructure. Rather than elevating infrastructure for aesthetic purposes, Engler conceptually reorders urban-nature relations through direct contact with infrastructure.³¹⁷

³¹⁶ Mira Engler, *Designing America's Waste Landscapes* (Baltimore and London: Johns Hopkins University Press, 2004).

³¹⁷ Ibid.

The ideas proposed by Lynch, Engler, and Reno have received little attention among municipal waste practitioners, but they offer concrete alternatives to how solid waste problems might be imagined. And, threads of some of their thinking does appear in counter proposals by citizens in the face of AWR infrastructure proposals in Seattle, suggesting that these ideas indicate some level of cultural convergence; maybe we are ready to live with out wastes in new ways.

Conclusion

Over the 19th and 20th centuries, a distinct regime around generating and managing wastes emerged and evolved in the United States. The Sanitary City Regime, grounded in logics of hygiene, beauty, and morality established the “out of sight, out of mind” expectation for garbage that remains the foundation of our current waste regime in the United States. The confluence of the environmental movement and the cracks that developed in Sanitary City systems because of ballooning waste quantities and litter forced the regime to adapt.

The development of municipal recycling programs signaled some important shifts that led to a what a Weak Recycling Waste Regime. While on the surface, the development of municipal recycling and ISWM programs appear to be moving towards more environmentally responsible resource stewardship, these programs must be understood as cosmetic changes to the larger regime of production, consumption, and wasting. The role of industry and the discipline of sanitary engineering, whose expertise is at the end of the pipe, in determining the regulatory and programmatic paths for waste have assured that one-way material flows still dominate, even as recycling—itsself environmentally problematic—increases.

It is tempting, therefore, to view this history of the evolution of the problems of waste and the Weak Recycling Waste Regime as the triumph of the post-Fordist consumer economy, and no doubt this is a large part of the story. However, to leave it at that would deny the proliferation of ideas, from small to significant that have challenged the dominant regime of waste. It also obscures the less obvious mechanisms of power and path dependence that have conspired to shape our current waste management systems, orienting and limiting them in very particular ways.

The divergent problem frames for waste have often been debated in the public sphere, either through widespread advertising or the press. Thus, the audience has largely been individuals. While waste diversion tactics demand infrastructure and manufacturers to handle material and reintroduce it to the market, it fundamentally turns on individual behavior rather than governments. The KAB frame, ISWM, and even ZW as it is being practiced, ask a lot of the consumer; it is each individual's responsibility to shop selectively, reuse ingeniously, and dispose appropriately. Even Mira Engler's radically reimagined decentralized waste transfer system requires individuals to adopt new relations to their wastes, their places, and their infrastructure. Public support for recycling programs, even when they are economically and environmentally inefficient, indicates the degree to which people have internalized the messages of the significance of individual recycling.

Shifting problem frames within the sphere of municipal government is hard. In the case of municipal waste management, local government actors are still endowed with responsibilities established in the 19th century, under the aesthetic and public health problem frames. This means that the core responsibility of many waste management departments is the collection and removal of waste to protect public health; questions raised by other problem frames—consumption,

disposal practices, resource management—have no purchase in a minimally funded department struggling to meet its basic daily responsibilities.

The following chapters will begin to look at these problems of garbage in Seattle and Boston, tracing how problem frames have changed and where they have gotten stuck, and how these two systems have butted up against and worked within the Weak Recycling Waste Regime.

PART II : GARABGE IN PLACE

Introduction: The National Rise of Waste-to-Energy (WTE)

In the 1970s and 80s, as local landfills closed, municipalities were forced to send their garbage to regional landfills, or even further afield. The increased transportation was costly, and municipal waste hauling costs began to skyrocket, with little relief in sight.³¹⁸ For municipalities with little likelihood of building a new landfill, new technologies for energy production from garbage started to look like an attractive option. Further, federal incentive programs, both under RCRA and other federal laws, facilitated the development of so called “resource recovery” through waste-to-energy (WTE) incinerators. Energy tax credits, investment tax credits, and depreciation rules worked together to make the development of WTE facilities more profitable, and the waste industry took good advantage of these programs until financing rules were changed in 1987.³¹⁹

Several successful WTE facilities were built in Europe in the early 1980s. American energy and waste management companies took note and scrambled to apply the technologies in the U.S. Within the framework of ISWM, the EPA and several state plans actively promoted resource recovery as part of a responsible, comprehensive waste management solution.³²⁰ By of 1989, there were 100 WTE plants operating in the U.S. with 115 more under construction.³²¹ Some anticipated that as many as 400 incinerators would be operating in the country by 1990.³²² Across the country, waste management companies and engineering consulting firms marketed WTE to strapped cities

³¹⁸ Church, Holmes, and Taylor, “Garbage, Garbage, Everywhere Landfills Are Overflowing, but Alternatives Are Few”; Hudson, “Garbage Crisis: Landfills Are Nearly Out of Space”; Keppel, “Garbage Crisis.”

³¹⁹ Marie Cocco, “Locals Left Holding the Bag,” in *Rush to Burn: Solving America’s Garbage Crisis*, ed. Newsday (Washington, D.C.: Island Press, 1989), 127–39.

³²⁰ US EPA, “The Solid Waste Dilemma: An Agenda for Action.”

³²¹ Richard C. Firstman, “High States Risk on Incinerators,” in *Rush to Burn: Solving America’s Garbage Crisis?*, ed. Newsday (Washington, D.C.: Island Press, 1989), 8.

³²² Shabecoff, “With No Room at the Dump, U.S. Faces a Garbage Crisis.”

with few apparent waste disposal alternatives. One firm with a national profile, CSI, Inc., was contracted in both Boston and Seattle in the early days of their waste facility planning.

The solid waste crisis and rise of WTE triggered a national conversation about waste that challenged the Sanitary City Waste Regime. As the country faced the possibility of not being able to handle the volume of waste it was creating, cities were suddenly at the front line of what seemed at the time like an existential crisis. Would the nation choke on its refuse? The national solid waste crisis and its aftermath have been explored by historians and sustainability scholars, and a handful of individual incinerator projects have received scholarly attention.³²³ But how the garbage crisis played out in municipalities has not been well documented.

The unfolding of WTE negotiations and subsequent waste planning in Seattle and Boston show how the municipal decisions made during this time of crisis reset frameworks of municipal solid waste management and laid the groundwork for next 30 years of municipal waste management. Understanding the local politics of solid waste decisions at the crisis-point in the 1980s explains a great deal about cities' current waste systems, and provides some clues about how to encourage system change in the future.

³²³ Firstman, "High States Risk on Incinerators"; Hunter Bacot, Terry Bowen, and Michael R. Fitzgerald, "Managing the Solid Waste Crisis: Exploring the Link between Citizen Attitudes, Policy Incentives, and Siting Landfills," *Policy Studies Journal* 22, no. 2 (Summer 1994): 229; Anthony E. Ladd, "The Solid Waste Crisis and Support for Recycling: A Research Note," *Sociological Spectrum* 10, no. 4 (October 1, 1990): 469–84, doi:10.1080/02732173.1990.9981941; Jonathan Phillip Meyers, "Confronting the Garbage Crisis: Increased Federal Involvement as a Means of Addressing Municipal Solid Waste Disposal," *Georgetown Law Journal* 79 (1991 1990): 567; Melosi, "The 'Garbage Crisis' and the Weight of History"; Martin V. Melosi, "Down in the Dumps: Is There a Garbage Crisis in America?," in *Effluent America: Cities, Industry, Energy and the Environment* (Pittsburgh, PA: University of Pittsburgh Press, 2001), 68–91; Klapp, "Bargaining with Uncertainty."

Chapter 4 From Trash to Treasure: Radical Reframing in Seattle

Introduction

Seattle is “urban by nature.”³²⁴ It is a city carved out of hills, nestled among mountains and magnificent waters. As its earliest colonists wrested land and resources from indigenous inhabitants, they also struggled to contend with forces of flood and fire that reduced the city to rubble again and again. Foolhardy engineers, or in their own words, “engineers with vision and courage” transformed the land, block by block, creek by creek, organizing wild territory into infrastructured settlement. But Seattle has also worked to protect the same nature its development threatened. The city went to great lengths to reestablish salmon runs when it appeared that culverted creeks, deforestation, and other plagues of development were reducing their numbers catastrophically. In enacting this careful balance, Seattle’s leaders recognized that “A city’s foundations rest on the infrastructure—those systems, services, and structures that provide a good life for the city.”³²⁵

Seattle’s efforts to control, subdue, and protect nature through infrastructure remain a visible and overt part of the city’s identity; it is a messy and mixed city that exposes the fragility of the boundaries between the urban and the natural in Western thought.³²⁶ The efforts of the engineers have been successful in many ways. People move to Seattle to live in a beautiful place that is close to nature. The city’s policy legacy reflects the value that residents place on the environment. By the mid-1970s, Seattle was interested in what we would now call green infrastructure. The city was investing in tree-planting and bike lanes, and publicizing those investments with pride. As early

³²⁴ Matthew Klingle, *Emerald City: An Environmental History of Seattle* (New Haven: Yale University Press, 2007).

³²⁵ 1983 Annual Report, p.3

³²⁶ Klingle, *Emerald City: An Environmental History of Seattle*.

as the late 1970s and early 1980s, Seattle's city government was encouraging voluntary composting and recycling.

Case Overview

The environmental sensitivity exhibited in certain city programs was not enough to make Seattle immune from the solid waste disposal crisis sweeping the country. By the mid-1970s, Seattle's city government was well aware that they would lose their local disposal capacity and be forced to find an alternative waste management strategy. Seattle leased two landfills in the neighboring city of Kent that accepted almost all of the city's commercial and residential waste, but both were rapidly filling up, and by the 1980s were plagued with a series of leaches and leaks; they were eventually both determined to be superfund sites requiring expensive cleanup.

During the late 1970s, Seattle was also coping with the energy crisis. Because it ran its own electric utility, Seattle City Light, the city had to confront the energy crisis directly. They did so by reorganizing the utility to prioritize conservation in all of its operations. The moves at City Light are key to our story here, because at the time, both City Light and solid waste were organized under the umbrella of Seattle Public Utilities (SPU). SPU was managed by Seattle's engineering department, a large and powerful unit within city government that oversaw, in addition to City Light and solid waste, most of Seattle's roadways, bridges, sewers, and water supply. Seattle's solid waste unit,³²⁷ like City Light, was organized as a utility; it charged rates for the services it provided to residents. Thus when the solid waste crisis came into focus, Seattle's waste engineers looked to their colleagues in City Light for answers.

³²⁷ Seattle's Public Utilities have been organized and reorganized many times over the years. Garbage has been handled by a sub-unit of the engineering department, by its own division within SPU, and other organizational structures. For the most part, these reorganizations did not affect the leadership of solid waste, or the chain of command up to the Mayor. For the sake of readability, I will refer to the solid waste unit as the "Solid Waste Utility" or simply "the Utility," because it never ceased to operate as a utility even when it was subsumed within departments of other names.

Given the potential energy generation, and the fact that the Solid Waste Utility was run by engineers, WTE incineration in Seattle was the obvious path forward. In Seattle, WTE was consistently referred to as “energy recovery”—reflecting the influence of City Light and the optimism with which city leaders viewed the technology. The original plan crafted by the engineers at the Solid Waste Utility, and supported by both by the Mayor at the time, Charles Royer, and Seattle residents, was to build energy recovery facilities in partnership with King County. Garbage was defined within a straightforward disposal problem frame, and a partnership with King County could reduce the costs of investing in disposal infrastructure, and potentially even make it possible to build no new disposal infrastructure within the city itself. A number of factors conspired to challenge this vision.

First, regional politics redefined the nature of the waste problem. When Seattle’s landfills closed, the city began to send all of their waste to the King County landfill in Cedar Hills for disposal. The County charged exorbitant rates and began to pressure the city to fast-track alternatives. The city and county did begin a joint planning process to study the potential of a county-wide network of energy recovery incinerators, but Seattle politicians began to worry that they were ceding too much power to the county. They feared that working with the county would result in higher costs, and hosting regional infrastructure in the city, rather than the inverse. Suddenly, keeping Seattle’s garbage in Seattle appeared to be a better option. Garbage had become a source of power.

Meanwhile, the city had also been exploring the possibility of building an incinerator locally. Seattle residents were strongly opposed. Residents had multiple channels through which to communicate with politicians and waste managers, both formally through structured planning processes, and informally through direct communication with city staff and elected officials. They took full advantage of this institutional openness. Meanwhile, the solid waste utility underwent major staffing

changes, replacing engineers with generalists skilled in public process and communications. As a result, resident opposition to the incinerator was expressed, and interpreted, not as NIMBY politics, but as a productive search for alternatives. The discourse around garbage among citizens and city officials directly took on the material, spatial, and temporal identities of garbage, and eventually reframed waste as a potential resource that would be squandered in an incinerator.

Building on citizen recommendations and expert consultant advice from a wide range of disciplines, the city developed a plan for aggressive recycling and waste reduction as the primary means of dealing with Seattle's garbage. To accommodate the remainder of Seattle's garbage after reduction and recycling, the city contracted with an affordable landfill in Eastern Oregon that was reachable by train, but far outside the regional politics of King County. As part of this shift, citizens were empowered to play a more active and significant role in waste management as they were given increasing responsibilities for waste separation and handling in the home. The city government's role also shifted, from simple service provider to educator, facilitator, and steward, in addition to manager and service provider.

In this chapter, I present a detailed examination of how energy recovery was ruled out in favor of aggressive source reduction and recycling plans, with landfilling for the remainder. I argue that a substantially diversified Utility staff, actively engaged citizens, and a particular regional garbage geography led to the redefinition of garbage. It went from being a disposal burden to a complex material that could both impose costs over time and be of value in multiple ways. Its control conferred power in the region, and the material itself was constituted by things that had a higher purpose than to be disposed. The result of this redefinition was policies and programs that were wildly ambitious and experimental in the American context. During this decade, the practice of

solid waste management was transformed, setting the stage for experimental resistance to Weak Recycling Waste Regime.

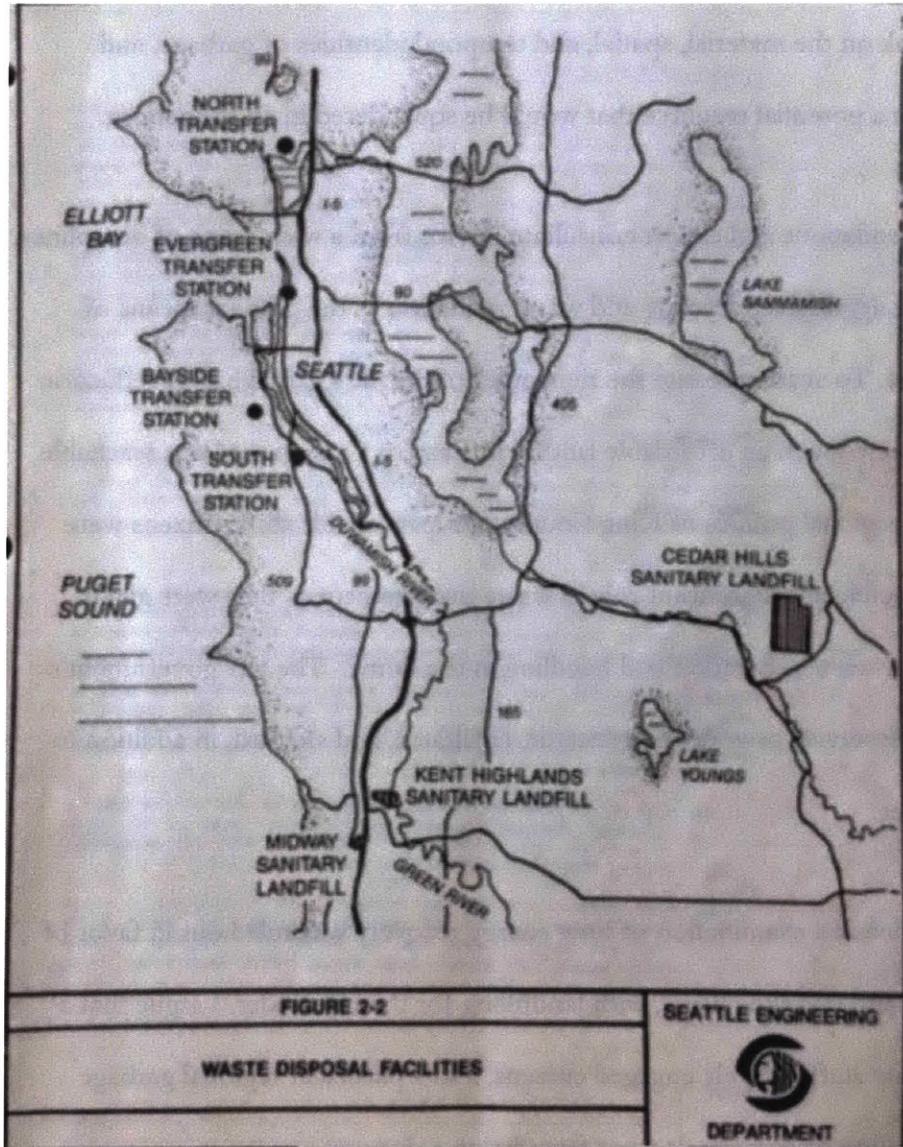


Figure 4.1. A map from a 1986 plan shows Seattle's disposal infrastructure. The Kent Highlands and Midway Landfill are visible towards the bottom of the frame; King County's Cedar Hills Landfill can be seen to east of the city. The North and South transfer station remain key pieces of the city's disposal infrastructure today. Source: Seattle Solid Waste Management Study: Policy and Development Plan, Nonproject Environmental Impact Statement, January 1986; SMA/ 3127

The Disposal Problem

At the beginning of the decade, despite pervasive concerns about energy conservation and about finding “environmentally beneficial”³²⁸ means of processing the city’s waste, the problem of garbage in Seattle was initially framed in narrow and conventional terms. In the early 1980s, the utility described its fundamental mission within the logic of the Sanitary City. “Garbage collection and sewer service,” the Utility proclaimed in its 1983 Annual Report, “function to prevent disease and provide for a beautiful environment.”³²⁹ As shown in Chapter 3, this logic is attached to a primary concern with removal of wastes. As disposal infrastructure evolved over the 20th century from open burning dumps to sanitary landfills, emphasis in Seattle remained on end-of-pipe solutions that did not fundamentally challenge the logic of a disposal-driven system.

Seattle’s first comprehensive approach to solid waste management was articulated in 1978, within City Council Resolution 25872, which was informed by a recent plan undertaken by the Solid Waste Utility. The resolution established a four-part system for Seattle’s waste: landfill, recycling, energy recovery, and yard waste composting, in that order. The Resolution charged the Solid Waste Utility with negotiating favorable contract terms with King County for the use of its landfill, for developing a recycling program, initiating the planning for energy recovery, and exploring the feasibility of a yard waste composting program. Though recycling and composting were included, the Resolution indicated considerable uncertainty about their ultimate role in the city’s waste system. It directed the Utility to devise multiple scenarios to account for the failure of the city to meet “realistic” recycling and composting goals. The landfilling and energy recovery portions of

³²⁸ This phrase is used several times in documents from 1980 surrounding the development of the city’s composting strategy. For example, the phrase is used in the preamble to a draft resolution put before the city council to adopt a goal of diverting all yard waste out of the waste stream, and adopting the composting strategy (SMA 4675-02 Solid Waste, Composting 1980 1-6).

³²⁹ Seattle Engineering Department, Annual Report, 1983, p.3; SMA/1802.G2/5/1983-1989/1983-1990.

the resolution were far more developed, providing guidelines for evaluating options, determining risks, working with neighboring governments, and identifying community and environmental impacts.³³⁰ The undeveloped nature of the recycling and composting elements highlights the city's disposal emphasis.³³¹

Throughout the early 1980s, the Solid Waste Utility worked within the framework set by Resolution 25872, with a primary emphasis on energy recovery planning. Energy recovery was viewed as the long-term solution with a long lead time. While that was underway, the Utility followed through with the directive to initiate a yard waste composting program.

In planning for the program, the Utility framed its efforts as a way to reduce the city's "disposal burden." The Utility urged the City Council to fund the program by arguing that "Yard waste is a significant part of the City's burden, especially in the peak summer months. Composting can reduce that burden."³³² When city officials turned to the public to market the program, they appealed to residents' conservation ethic by naming the program "Use it again, Seattle," and argued that the benefits of composting "appear to be extraordinary; for a relatively small cost, we can return beneficial nutrients to the soil and at the same time reduce the residential waste stream by as much as 20% (by approximately 40,000 tons per year)."³³³

The program, however, was strictly voluntary, and consisted of educational outreach to residents.

The city provided information about how to safely and effectively compost yard waste at home.

³³⁰ City of Seattle, "Resolution 25872" (1978).

³³¹ It should also be noted that these were relatively new areas for municipal intervention at the time; there was no tradition of planning for these activities nor were there comparable programs in other places to serve as models.

³³² Letter from Sam Sperry, director of the Energy Department to Paul Kraabel, president of the city council, January 15, 1980; Archive Loc: 4675-02 Solid Waste, Composting 1980 1-6.

³³³ Letter from councilmember Jack Richards to resident Pat Coburn, February 29, 1980; Archive Loc: 4675-02 Solid Waste, Composting 1980 1-6

Although the city did not record the program’s impact on the landfill-bound waste stream, there is evidence that residents supported the program and participated in relatively large numbers (one constituent letter in support of the program is shown in Figure 4.2). A “composting hotline” staffed by the utility received more the 4,000 calls during its first year of operation.³³⁴ Whatever its success though, the city’s investment was minimal, and the program targeted only the portion of the Seattleites living in houses with yards who had the time and inclination for yard care and gardening. The program included no direct service provision, infrastructure investment, or market development for composted yard waste.

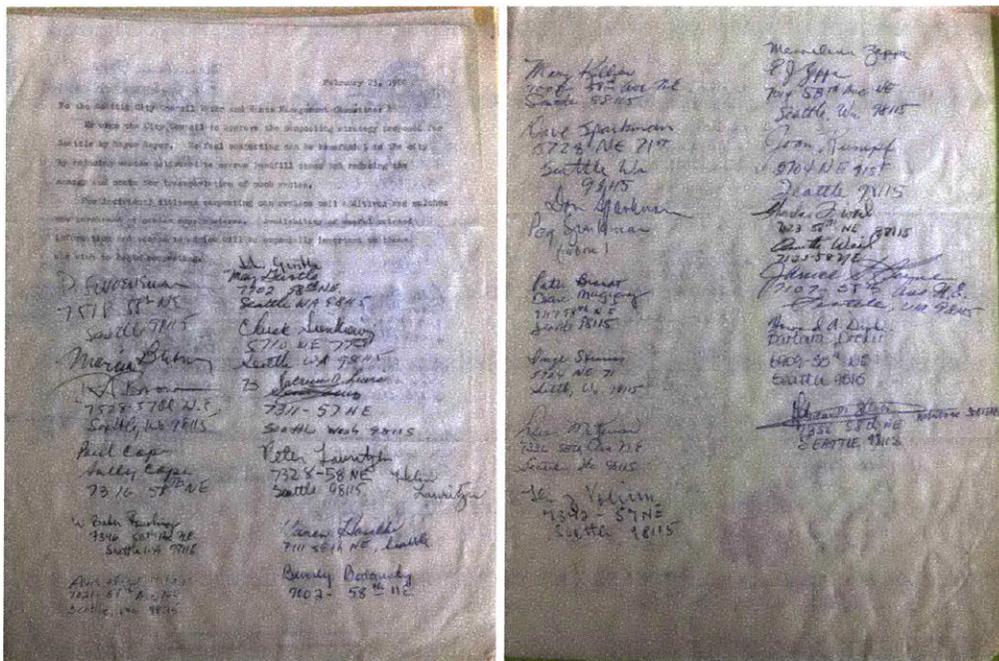


Figure 4.2. Hand-signed letter from constituents to the City Council’s Waste Management Committee, urging its members to support the composting program. Source: SMA/4630.02/9-1

In the city’s formal program descriptions, the disposal logic undergirded the concern for resource conservation. A press release about the composting program from the Solid Waste Utility opened by establishing the urgent nature of the disposal problem. The statement opened with the disposal

³³⁴ (1981 Annual Report, p. 4).

context: “The City of Seattle is faced with both increasing costs and a shortage of space for disposal of solid waste. Last year the City had to dispose of more than 500,000 tons of solid waste.”³³⁵ Composting of yard waste was, first and foremost, designed to minimize the city’s disposal problem.

This orientation was clarified over the next year, while the city progressed with energy recovery planning. The Utility crystalized the city’s approach to waste planning in the 1981 “Proposed Recycling and Waste Reduction Strategy” which aimed to “fulfill the recycling and waste reduction requirements of Resolution 25872.” The strategy framed the city’s approach to waste management as “twofold: to reduce the amount of waste requiring disposal through composting, recycling and other waste reduction methods; and to recover energy from the remaining waste, with land disposal of residuals.”³³⁶

The plan, even though it included “waste reduction” in the title, was end-of-pipe in its orientation. Like the preliminary composting program launched the year before, it relied on outreach and education to shift individual behavior, with some strategies to make recycling markets more effective. The Utility proposed to evaluate the possibility of recycling collection in multi-family properties, but made no other references to direct service provision or infrastructure development. Rather, it sought to capitalize on the fact that Seattle residents already recycled through a network of private recyclers.³³⁷ The overt framing around Seattle’s disposal problem translated into low-cost diversion programs designed to ease the city’s disposal burden while energy recovery was still years away.

³³⁵ News Release for “Use it Again Seattle,” May 5, 1980; Archive Loc: 4675-02 Solid Waste, Composting 1980 1-6.

³³⁶ Seattle Solid Waste Utility, 1981. “Proposed Composting and Waste Reduction Strategy.”

³³⁷ IBID

The disposal problem frame presented by the Utility was relied on and broadcast during this period by local newspapers. In general, local coverage emphasized the traditional aspects of a Sanitary City disposal problem; most articles opened with statistics about the growing volume of Seattle's waste and shrinking landfill capacity. One particularly hardboiled account put it this way:

For years this “out of sight, out of mind” approach to throwaways worked well, but in the past decade the Engineering Department has discovered that yesterday's paper is still bad news. Seattle's landfills will be packed to the brim by the end of 1981, and the only remaining landfill in King County (Cedar Hills) is filling up faster than you can crumple a beer can and toss it in the rubbish. For this reason stowing trash has become a hot topic at City Hall, where bureaucrats must find a way to reduce waste before the city sinks under its own rubble.”³³⁸

The framing in this article and others from the same period reflected the national discourse about America's garbage crisis—growing volumes of waste and shrinking landfill capacity was leading to doom. These articles often explicitly positioned Seattle among similar cities seeking solutions. This means that Seattle residents were seeing Seattle's problem sketched in clear terms. It was not only a local problem, but a systemic one.

Upending Waste Planning: New voices, new expertise, new values, new tools

Citizen voices

By the 1970s, Seattle already had robust public input processes, and citizen participation was an integral part of all planning and policy efforts in the city. The city government, both within and beyond the Solid Waste Utility, was organized to receive and absorb that input. There were three public-facing organizations within city government with influence over the waste planning process: the Solid Waste Utility, the Mayor's office, and the City Council. Representatives from each of these bodies were actively engaged with Seattle residents throughout the 1980s through formal and informal channels.

³³⁸ Candace Dempsey, “Who Gets the Garbage?,” *Argus*, December 5, 1980.

Informally, letters from residents were received, responded to, and shared among city officials. Thoughtful and individualized responses to citizen inquiries from Diana Gale, head of the Solid Waste Utility, from 1987 onwards, Virginia Galle, head of the Environment Committee of the City Council, and Mayor Charles Royer—even if they weren't written by the officials themselves—suggested a culture of responsiveness in city government.

Many of the letters between government officials and residents were inspired by the frequent and dramatic rate hikes over the decade. In 1980, the City Council approved a variable rate for garbage; for the first time Seattleites would be charged based on the amount of trash they set out rather than a flat fee. The Utility undertook a thorough study to determine how to set the new rate structure,³³⁹ but they were forced, almost immediately to raise rates. Subsequently, the Utility raised rates almost annually over the 1980s. Rates skyrocketed in 1986, after both of Seattle's last dumps in Kent were determined to be superfund sites that would require massive and very expensive clean up.³⁴⁰ The regular rate hikes meant that Seattle residents were keenly aware of their garbage; the monthly bills provided both a channel through which the Utility could communicate with residents, but also a hook that kept residents connected to the ongoing crisis. Residents also wrote to city officials in support of and opposition to new programs; thousands of residents, both individually and in

³³⁹ Seattle Solid Waste Utility, Seattle Solid Waste Pilot Programs Source Separation and Variable Rate Study, October 1979; SPL / SEADOC / E5.9

³⁴⁰ Susan Gilmore, "Variable-Rate Garbage Fees Approved by Seattle Council to Start January 1," *Seattle Times*, June 17, 1980; Susan Gilmore, "Garbage Rates May Go Up 70 Cents," *Seattle Times*, September 15, 1981; Marshall Wilson, "Garbage Rates Going Up to Pay Cost of Fixing Midway Landfill," *Seattle Times*, August 30, 1985; Susan Gilmore, "Garbage Rates Will Skyrocket in Seattle - Increases from 59% to 82% in Effect Aug. 1," *The Seattle Times*, July 22, 1986; Scott Maier, "Our Garbage Rates Could Increase 80%," *Seattle Post-Intelligencer*, January 20, 1986, sec. A3; Scott Maier, "Garbage Pickup Rates Would Skyrocket under Proposal by the Mayor," *Seattle Post-Intelligencer*, April 23, 1986; David Schaefer, "Council OK's 60% Boost in Garbage Rates," *Seattle Times*, July 4, 1986, sec. B1; David Schaefer, "Boost in Garbage Rates Called Unfair," *Seattle Times*, May 7, 1986; Bob Lane and David Schaefer, "Royer Asks 79% Boost in Trash Fees," *Seattle Times*, April 22, 1986; Don Hannula, "Today's Seattle Rate Increase New Challenge for the Garbage Gestapo," *Seattle Times*, August 1, 1987, sec. Editorials and Opinion.

coalitions, wrote to express opinions—mostly, though not exclusively, in opposition—about the energy recovery proposal.

On top of this consistent, informal exchange between residents, solid waste managers, and elected officials, there were also formal input processes structured into ongoing solid waste planning work. The Solid Waste Utility produced several planning documents including the Recycling and Waste Reduction Plan mentioned earlier, a composting study, a series of rate studies, and the Solid Waste Comprehensive Plan (Vol. 1) in 1980, and the Solid Waste Management Study: Policy and Development Plan (Vol. 2), in 1986 (SWMS Vol. 2). The process for generating the SWMS Vol. 2 included an exhaustive set of professionals including experts in communication, engineering, ecology, public health, and solid waste infrastructure. The process had also included robust public involvement throughout from the shaping of the scope through to the selection of preferred options, and included many recommendations that had come directly from the public.³⁴¹ The comprehensive plan and most of the other plans were prepared both with traditional consultative public input through public meetings, and also were presented in public hearings to the City Council.

More significant in terms of public input, though was the EIS that was prepared for the energy recovery project. The city structured the public input process to start with the scoping of the EIS, and continue through comment on the nearly-complete draft version. From the very beginning, the city was committed to a complete and thorough review. In a newsletter about energy recovery that went out to all ratepayers, the Utility stated:

To make sure that the draft EIS for the Energy Recovery Project is as complete as it should be, and, in fact, asks all of the important questions, deciding the scope of the

³⁴¹ Letter from Eugene Avery to Mayor Royer, May 23, 1986 (SMA/2602-02/1986/34-10); Solid Waste Utility Recommendations to the Mayor: A System to Manage Solid Waste, 1987 (SMA/2600-05/5-8/Resource Recovery 1987).

draft EIS for this project will be highlighted at a series of community meetings to be held in late February and early March. These meetings have been planned to give people in Seattle a forum for asking questions and voicing their comments and concerns about energy recovery. The issues raised in these “brainstorming” sessions will then be incorporated into the draft EIS.³⁴²

The solid waste planners were quite true to their intentions to use citizen input to shape the EIS.

As a result, the EIS was scoped broadly and fully considered a range of options, ranging from energy recovery to an aggressive recycling and waste reduction program with landfilling.

Throughout the EIS process, the Utility and its consultants remained open to formal and informal public input. During the preparation of the first draft EIS, the Utility received dozens of written comments and several hours of verbal testimony at meetings, all of which was recorded and responded to.³⁴³ Building on a culture of engagement and responsiveness in other areas of government, and a historical moment during which people were paying close attention to garbage, the public discourse around waste in Seattle was robust. Not only did thousands of city residents participate, but all of the organizations within city government engaged with waste planning had the institutional capacity to absorb and respond to that input. In short, solid waste planning was being, in effect, coproduced.

Expanded expertise at the Utility

Along with the meaningful participation of citizen voices in planning processes, the Solid Waste Utility was also drawing on a variety of knowledges provided by their own staff and by consultants whose experience and professional orientations expanded far beyond the traditional sanitary engineering fields. From the top on down, the Utility staff was overhauled over the course of the

³⁴² “Waste to Energy: Seattle Engineering Department Energy Recovery Newsletter,” February 1984 (SMA/2600-06/1-2)

³⁴³ Memorandum from Eugene Avery, Director of Engineering to Councilmember Virginia Galle, April 23, 1986 (SMA/2602-02/34-7)

decade. The first key hire was Don Kneass in 1984. He was a veteran of the private recycling industry in Seattle, and was brought in to develop and run new recycling programs.³⁴⁴

Before Kneass had been able to get any recycling programs off the ground, the Solid Waste Utility found themselves mired in a full-fledged public credibility crisis that had been building for some time. Methane was leaking uncontrollably from the City's two landfills in Kent, and it was exposed that Seattle officials had known about the leaks for months or even years.³⁴⁵ Garbage rates had been climbing,³⁴⁶ but the new variable rate structure was not having the intended affect of reducing waste generation,³⁴⁷ and skeptics argued that the utility was squandering its resources.³⁴⁸ Reports of uneven collection following a major rerouting were published regularly in local papers. The head of solid waste, Gerard Fairbanks, stepped down in 1981 amid rumors that he was asked to resign over the methane leaks at the Kent landfills.³⁴⁹ Just five years later, the following head, Rich Owings, a long time Utilities employee, also stepped down in 1986.

³⁴⁴ "Waste Watch: A Balanced Approach," July 1984 (SMA/2600-06/1-2)

³⁴⁵ Charles E. Brown, "Methane at Midway Landfill Still Keeps Two Families from Homes," *Seattle Times*, December 5, 1985; Elizabeth Pulliam, "Methane Jeopardizes Day-Care Center," *Seattle Times*, August 29, 1985; Duff Wilson, "City Advised to Hire Gas Expert 11 Months Ago," *Seattle Post-Intelligencer*, November 4, 1986; David Schaefer, "Midway: A Trail of Trouble," *Seattle Times*, February 4, 1987.

³⁴⁶ Gilmore, "Garbage Rates May Go Up 70 Cents"; Wilson, "Garbage Rates Going Up to Pay Cost of Fixing Midway Landfill"; Gilmore, "Garbage Rates Will Skyrocket in Seattle - Increases from 59% to 82% in Effect Aug. 1"; Maier, "Our Garbage Rates Could Increase 80%"; Schaefer, "Council OK's 60% Boost in Garbage Rates"; Schaefer, "Boost in Garbage Rates Called Unfair."

³⁴⁷ Susan Gilmore, "Audit: Pay-by-Can Rates Failing to Cut Back Garbage," *Seattle Times*, December 17, 1981.

³⁴⁸ Editorial, "City's Garbage Utility Doesn't Rate Very Well," *Seattle Times*, May 1, 1981; Eric Naider, "Ex-Manager Calls Garbage Rates a Rip-Off," *Seattle Post-Intelligencer*, May 2, 1981.

³⁴⁹ Susan Gilmore, "Head of Garbage Utility Leaves Job," *Seattle Times*, April 20, 1981.

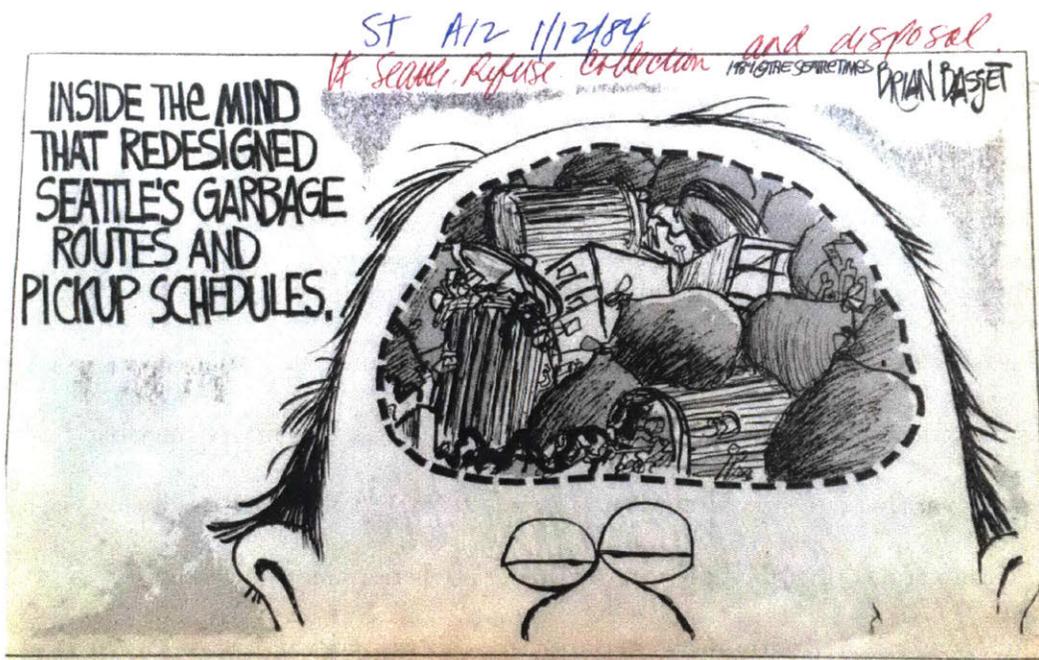


Figure 4.3. Cartoonists in the local papers during the era frequently took on the Solid Waste Utility as their subject. In this one, the cartoonist is critiquing redesigned routes and schedules that were supposed to save money but led to a rash of missed garbage collections. Source: Brian Basset, *Seattle Times*, January 12, 1984, p. A12; SPL Seattle Collection.



Figure 4.4. The *Seattle Times* ran this photo of an embattled Owings during a public hearing about Seattle's escalating garbage rates. Source: *Seattle Times*, May 7, 1986, D1; SPL Seattle Collection.

The Mayor selected Diana Gale to replace Owings. Gale was the much-trusted head of the City Council's policy staff. She had no particular experience in solid waste. In her own words, she felt that hiring her had been an act of desperation:

...I was two weeks into the job and the Deputy Mayor was introducing me to the solid waste advisory council, which was a group of, you know, eight engineer men. And they had been very clear with the Mayor that they wanted an engineer. So the Deputy Mayor was introducing me and then there was a silence, a pause. And the chair of the committee looked at the Deputy Mayor and said, "Why did you pick her?" At which point, without thinking the deputy mayor said, "Well we asked 65 people and she was the only one interested." So...Well, a) I don't know if they asked 65 people and I was the only one interested, or b) my thinking was from the Mayor's point of view, this was an impossible job. And that picking me, who was the darling of the City Council, would take some pressure off of him. Because the City Council would be slow to be terribly critical of me because they liked me. And so I think that was part of his strategy. I don't think anybody thought it could be done.³⁵⁰

Gale took the reins of the Utility in January 1987. She was instructed during her first week on the job that she needed to get a city-wide curb-side collection program up and running in six months. She was also handed the increasingly controversial incinerator project, a terribly costly contract with King County's landfill which was by then receiving all of Seattle's garbage, and a lot of public distrust. Her first moves were to request a huge budget for communication, and to hire a project manager for the Comprehensive Solid Waste Study and a new finance person. The finance person was a longtime Seattle Utilities guy. But the project manager was Tom Tierney, a bright, competent public servant, who, like her, had no background in solid waste. The inclusion of these voices and perspectives introduced new values into the solid waste discourse and amplified values that had been present, but not central, to previous eras of planning. These values manifested in concrete tools and decision-making support structures that supported the emerging problem frames and new understandings of waste.

³⁵⁰ Diana Gale, Personal Interview, January 5, 2015.

New Tools

Central among these new tools were new methods for conducting true and true cost/benefit analyses. Throughout the early 1980s, the Solid Waste Utility conducted a variety of cost-benefit analyses in its exploration of energy recovery. Such economic analysis provided “the basis for two essential comparisons: costs of building and operating an energy recovery plant with the costs of continued landfilling and the costs of different size energy recovery plants.”³⁵¹ In 1984, the Utility proposed a new analytical method, which the Mayor ultimately recommended to the city council. The Environmental Allowance method created “a methodology for making environmental impacts a part of the cost/benefit analyses of solid waste programs.”³⁵²

In 1987, the City Council adopted Resolution 27306 which allocated a budget for the Environmental Allowance Program (EAP). The intent of the program was to support community-based and private sector recycling and waste reduction efforts, and then evaluate their cost-effectiveness against the cost of disposal. In June of 1987, the Solid Waste Utility, working together with the Mayor’s Solid Waste Advisory Committee, began to review proposals from a variety of private sector entities.³⁵³ The EAP provided an opportunity to evaluate non-traditional methods of waste management and was used to fund a number of experimental small scale pilot programs that would otherwise have been deemed uneconomical.³⁵⁴

³⁵¹ Seattle Engineering Department, September – October 1983. “Waste to Energy Newsletter.” Archive Loc: 2600-06 Waste to Energy and Waste Watch 1983-1990 1-2

³⁵² Letter from Mayor Royer to Council President Norm Rice, August 10, 1984; Archive Loc: 4601-01/Solid Waste Comprehensive Plan (2) 1984-88 4-5

³⁵³ Memo from Engineering Director Gary Zarker to Mayor Royer, June 1, 1987; Archive Loc: 2602-02 Solid Waste Pilot Program 1986-87 33-14

³⁵⁴ “Solid Waste Management Study, Vol. II: Policy and Development Plan,” May 1986; Archive Loc: 4601-01 Solid Waste Comprehensive Plan (2) 1984-1988 4-5

The economic analysis of the incinerator proceeded in a relatively conventional manner. The analysis was designed to simply provide comparability between disposal alternatives in financial terms.³⁵⁵ But there were signs that other accounting practices were starting to influence decision-making. In 1986, the City Council Staff recommended that the City Council agree to “The City should consider funding future recycling programs that are 10 percent higher than the ‘avoided costs.’”³⁵⁶ Rather than a conventional cost/benefit approach, the avoided costs approach, which was detailed in the 1986 Draft EIS, used the current astronomical costs of landfilling at King County’s Cedar Hills Landfill as the benchmark. Then rather than evaluating each option against all other options to find the cheapest alternative, the city would consider any costs below 10% above the landfill costs to be “cost effective.” This expanded definition of cost effectiveness allowed the city to consider other values, such as the social and environmental benefits of recycling or composting, when comparing a variety of approaches.

The City Council and the Mayor were supportive of the approach developed by the Utility. In 1986, the Environmental Management Committee of the City Council pushed it even further by unanimously agreeing that “the City may consider future funding of recycling programs based on long term cost effectiveness;” this meant that the city would be willing to subsidize start up costs for programs that would be price competitive with disposal in the long run, but that required substantial up front investment.³⁵⁷

³⁵⁵ Letter from Al Yamagiwa via Jerry Garman to Randy Hardy, Seattle Engineering Department, April 17, 1986; Letter from Randy Hardy to Engineering Director Eugene Avery, April 21, 1986; Archive Loc: 2602-02 Solid Waste Recycling 1986 34-7

³⁵⁶ Alice Lui, Paul Matsuoka, and Bob Morgan, “City Council Staff Analysis of Solid Waste Management Study Volume II: Policy and Development Plan,” August 12, 1986; Archive Loc: 2600-05/Solid Waste Comprehensive Mgmt Plan 1986 5-10a

³⁵⁷ Environmental Management Committee’s Action on Solid Waste Comprehensive Plan, September 5, 1986; Archive Loc: 4601-01/Solid Waste Comprehensive Plan (2) 1984-1988 4-5

By 1988, when the city finally abandoned the incinerator proposal, the Utility was consistently presenting financial analysis in an “avoided costs” framework. Diana Gale summarized the approach in a letter to the City Council:

“...in the EIS estimates, maximum recycling assumed a willingness to pay full avoided cost. The constraints in the EIS are not budget constraints: spending is assumed to equal not only the avoided cost of disposal per se but also avoided environmental costs and other social costs as well.”³⁵⁸

By taking this approach, the Utility, supported by the Mayor and City Council, relegated fiscal costs—usually the driver of municipal decision-making—to a supporting role. They were able to do this because they had widespread public support for alternative waste management methods, and because they were supported by a variety of skills and knowledges able to translate the desire for new alternatives into tools and language that both public officials and the public recognized as legitimate.

Novel Problem Frames

The consistent inclusion of citizen voices, the expanded institutional capacity of the Utility to explore traditional and non-traditional garbage solutions, and variety of tools that the Utility used to analyze and present information led to a substantially altered garbage discourse in the city. Over the course of the 1980s, the “disposal problem” frame slowly dissolved, revealing a more complex and nuanced set of issues, and a new direction for solutions.

The emphasis on energy recovery started to alter the discourse around solid waste in Seattle by the early 1980s. The idea that waste could be converted into a valuable commodity had already started to shift the contours of the disposal problem before planning and opposition had really heated up.

³⁵⁸ Letter from Diana Gale to Councilmembers Jim Street and Jane Noland, September 27, 1987; Archive Loc: 2600-05 Resource Recovery 1986 8

News articles with headlines like “Who Gets the Garbage? Is There Gold in Those Cans?”³⁵⁹ and “Put Garbage in, Get Power out”³⁶⁰ positioned trash publicly as a potentially valuable resource. As the energy recovery plan gathered momentum, Mayor Royer told a local paper that “Burying garbage is not cost effective... Garbage is now worth money.”³⁶¹

As soon as the energy recovery project started to take shape, though, opposition to incineration did too. The potential value in garbage took on new meanings as advocates pushed recycling as a viable alternative. Even while energy recovery planning was moving full steam ahead, the Utility was also working towards recycling programs. Residents were clamoring for recycling to be considered alongside more traditional disposal options, and a recycling goal of 40% was already being considered by 1984, with energy recovery for the remaining portion.³⁶² No city in the country had a recycling rate even remotely close to 40%; Seattle leaders, driven by strong constituent pressure, were willing to consider untraditional possibilities.

In addition to a waste-as-resource framing visible in the conversations about the incinerator, several other reframings of the waste problem emerged, pushing the city away from traditional disposal towards alternative practices. By the end of the 1980s, evidence of a straightforward “disposal problem” was nowhere to be found. The 1989 Solid Waste Plan prepared by the Utility, titled “The Road to Recovery,” describes the problem of waste as “difficult,” and “uncertain,” and included new evaluative tools like the calculation of “full costs” and the “environmental implications” of any

³⁵⁹ Dempsey, “Who Gets the Garbage?”

³⁶⁰ “Put Garbage In, Get Power out,” *Seattle Times*, May 11, 1980.

³⁶¹ Susan Goldberg, “City Looks at Garbage for Energy,” *Seattle Post-Intelligencer*, December 22, 1982.

³⁶² The City Council formally adopted a 40% goal by 2010 in Resolution 27503 in 1986. This Resolution was taken on the basis of an early draft of the Comprehensive Solid Waste Management Study: Policy and Development Plan, Vol, 2, and several years of planning debates.

potential solution. The plan also, unlike in previous documents, identified citizens as key actors in waste planning and decision-making processes.³⁶³

Over the 1980s, garbage as a *thing* and as a *problem* was redefined; in the process the possibilities for its management were redefined. First, as the politics disposal within the region came into focus, waste was redefined as a source of power over which county and city leadership tousel. Second, through the process of planning for waste disposal, residents, politicians, and waste managers began to speak about the material and temporal life of garbage, giving heft and a future, to what was once understood in blunt, abstract, and strictly negative terms. New possibilities emerged from these discourses, many that started to nudge citizens and the state into new roles and relations vis-à-vis garbage.

Seattle's garbage geography: waste as a source of power in the region

As Anna Davies, Zsuzsa Gille and others have observed, garbage is spatial; it is always *somewhere*, and it is often moving.³⁶⁴ It both defines and is defined by the places where it is and its paths cut across political boundaries creating a specialized set of challenges for its management. As the planning process played out in Seattle, regional garbage geographies helped to shape a new identity for garbage itself and for the garbage problem.

As Seattle grappled with what do in the wake of its landfill closure, it was relying on King County's Cedar Hill landfill. The arrangements with King County were tense and expensive, and Seattle viewed the landfill as a stopgap measure. In order to proceed, the city had a number of difficult decisions to make.

³⁶³ City of Seattle. "On the Road to Recovery: Seattle's Integrated Solid Waste Management Plan," August 1989.

³⁶⁴ Gille, *From the Cult of Waste to the Trash Heap of History*; Davies, *The Geographies of Garbage Governance*; Dietmar Offenhuber et al., "Putting Matter in Place," *Journal of the American Planning Association* 78, no. 2 (2012): 173–96.

For the first time unable to dispose of its residents' solid waste in its own landfill, the City of Seattle must decide whether to give responsibility over to the County to dispose of Seattle's waste in one of the County's planned energy recovery facilities (sic), or to dispose of its waste either in its own system or in partnership with another entity.³⁶⁵

This passage from the 1984 draft of the Comprehensive Solid Waste Management Study indicates that the city viewed this juncture as historically unique, but also terribly important to the city's future.

In May of 1986, the Mayor formally declared his intention to partner with the county on the development of energy recovery. In a letter to the City Council president he outlined a number of reasons why partnering with the county made sense:

Clearly, we can no longer go it alone. I recommend that we recognize this reality, and begin to work with King Count and other cities to develop a comprehensive regional waste-disposal system. In the short run, this will involve landfilling at Cedar Hills. We should commit to helping the County move as soon as practical to build one or more energy-recovery plants to burn that waste which cannot be recycled. This will both produce electricity from a resource that otherwise would be wasted, and greatly reduce the environmental impacts of landfilling...

...Regionalizing solid waste management will require some difficult give-and-take by the affected governments, but to the average citizen it is unquestionably the proper approach. Public comment during the development of this plan overwhelmingly favored a regional solution. We elected officials, and our counterparts at the County and other area cities, must work together to develop the best regional solid waste management strategies in the nation. Our citizens, and the beautiful but fragile environment we all cherish, deserve no less.³⁶⁶

With the reality of incinerators on the table, the Mayor insinuated that a regional approach had the potential to reduce the city's responsibility for waste infrastructure. The popular support for such a measure suggests that many in the city hoped that the county might host the undesirable

³⁶⁵ Solid Waste Utility Recommendations to the Mayor: A System to Manage Solid Waste; SMA/4601-01/4-5

³⁶⁶ Letter from Mayor Royer to Sam Smith, May 28, 1986 (SMA/4601-01/4-5)

infrastructure. This is the standard politics of the Sanitary City Regime: no wants waste. Elsewhere is always a better place for it.

But the City Council was skeptical of a partnership with the County. In September of 1986, City Council Staff recommended that Seattle should maintain an independent disposal role.³⁶⁷ The City Council's Environmental Management Committee unanimously supported the recommendations in the Solid Waste Comprehensive Plan, with the exception of the issue of who would control the waste stream. As summarized by Council Staff,

“The issue under contention is whether the Council should concur with the Mayor's recommendation to turn over solid waste disposal to King County or whether the City should strive to develop its own disposal facilities. Regardless of whether the City or County disposes of Seattle's waste, it is likely that either institution would seek an energy/resource recovery (E/RR) solution to garbage not otherwise recycled or composted.”³⁶⁸

Because energy recovery would likely be part of the solution regardless, in other words, the City Council wanted to ensure that Seattle was able to maintain “a voice in decisions that affect City ratepayers.”³⁶⁹ Councilors Galle and Kraabel worried that the city would lose its voice in a regional system led by the King County, ultimately leading to practices and costs that were not optimal for the city.

The Solid Waste Utility also worried about a regional partnership. Utility staff argued to the Mayor that “there is no clear advantage for either the City or the region in the City's relinquishing its responsibility for waste management to the County or a regional authority.”³⁷⁰ Exporting waste and

³⁶⁷ Environmental Management Committee's Action Solid Waste Comprehensive Plan, September 1986 (SMA/4601-01/4-5)

³⁶⁸ Memo from Paul Matsuoka to All Councilmembers, re: Divided Report – Solid Waste Comprehensive Plan, September 5, 1986 (SMA/4601-01/4-5)

³⁶⁹ Ibid, p. 2

³⁷⁰ Solid Waste Utility Recommendations to the Mayor: A System to Manage Solid Waste (SMA/2600-05/5-8)

ceding disposal responsibility would reduce the City's ability to control costs. Furthermore, given the size of Seattle's waste stream, combining the city's waste stream with the county's would still likely result in some kind of incinerator facility within the city of Seattle. Because Seattle, at the insistence of residents, intended to accompany an independent facility with an aggressive recycling program however, it was anticipating slower waste stream growth than the County. This meant that a likely outcome of partnership would be a Seattle-based facility that accommodated County garbage. The Utility argued to the Mayor and the City Council that the city could build a smaller facility and maintain more control over waste reduction efforts if it moved ahead with waste planning independently from the County.³⁷¹

Responding to the Utility's arguments and City Council concerns, the Mayor reconsidered his position:

Seattle's waste poses special problems for the region: We simply have too much waste to be accommodated in someone else's disposal system. Seattle will behave most responsibly in partnership with the rest of the region not by dumping our responsibilities in someone else's lap, but by developing our own system in a tightly coordinated, well-planned regional system of waste management.³⁷²

By making an argument about responsibility in relation to the County, Mayor Royer positions Seattle, and himself, as noble leader. At first a material that no one wanted, garbage suddenly had the ability to confer regional legitimacy.

Local and regional advocacy organizations, and Seattle residents—who had once strongly supported a regional solution—also began to advocate more actively for an independent system.

One constituent was particularly direct on this point, telling the mayor: "I believe strongly that the

³⁷¹ Memo from Tom Tierny to Virginia Galle, Re: Response to Council Staff Information Request, August 20, 1987; (SMA/2600-05/5-8); Solid Waste Utility Recommendations to the Mayor: A System to Manage Solid Waste (SMA/2600-05/5-8).

³⁷² Letter from Mayor Royer to Sam Smith, August 3, 1987; Archive Loc: 4601-01 Solid Waste Comprehensive Plan (2) 1984-1988 4-5

city should take responsibility for its own garbage, rather than passing that responsibility off to the county. We create it, we should deal with it.”³⁷³ In similar, if more diplomatic, terms the League of Women Voters and the Municipal League of Seattle/King County released a joint statement also emphasizing the importance of taking responsibility for garbage:

The Leagues feel a regional approach to the disposal of solid waste can best be served by the City of Seattle maintaining control over its solid waste stream. As the producer of roughly one-third of total county garbage it remains Seattle’s responsibility to develop an appropriate disposal system for a corresponding amount of solid waste.³⁷⁴

King County, meanwhile, was not idly watching the process unfold in the city. In August 1987, the County proposed new rates for the city’s use of the Cedar Hills Landfill. The new rates included a \$10/ton surcharge. The county justified the charge as protection of the limited capacity and an incentive for Seattle to proceed with planning alternatives; but the city interpreted the charge as an unjustified penalty.³⁷⁵ Immediately following the announcement of the new Cedar Hill rates, Tim Hill, the County Executive, informed Mayor Royer that the city would need a County permit to build an incinerator in Seattle; the letter suggests, though does not state outright, that the city should not assume that such a permit would be easily forthcoming.³⁷⁶ These negotiations moves by the County emphasize that control of Seattle’s waste was a form of political power, and that both the city and the county recognized it as such. Management of the waste, particularly through energy recovery, could have been profitable and could have locked Seattle into a dependent relationship with the County that for decades to come.

³⁷³ Letter from Nancy Luenn to Mayor Royer, July 31, 1987; Archive Loc: 4630-02 / Energy - Resource Recovery - Letters and Info 1987 7-11

³⁷⁴ Municipal League of Seattle/King County and the League of Women Voters, Press Release: Statement on the City of Seattle’s Disposal Options Project, August 11, 1987; Archive Loc: 4630-02 / Energy - Resource Recovery - Letters and Info 1987 7-13

³⁷⁵ Letter from Mayor Royer to Audrey Gruger, August 11, 1987; SMA/2602-02/34-11).

³⁷⁶ Letter from Tim Hill to Mayor Royer, August 14, 1987; SMA/2600-05/5-8).

The recycling piece of Seattle's waste plan was less complicated, at least in terms of regional politics. Any material that was recycled avoided the regional politics altogether—and if the city proceeded with a County partnership, then recycling no longer just decreased the city's disposal burden, but could also diminish the power that the county wielded over the city. Constituent support for recycling aligned with the city leadership's growing commitment to limit county involvement in Seattle's waste management. Towards the end of 1987, Mayor Royer formally recommended pursuing the “maximum recycling option” of the Comprehensive Solid Waste Management Study, which was 40% recycling by 2010.^{377, 378}

In October 1988, the City formalized its intention to move ahead with independent waste planning.

The Mayor wrote to the city council:

The management plan we have agreed on is exciting and aggressive. Through the plan we have committed the City to provide convenient programs to accommodate the citizens' resolve to recycle; we have chosen the use of an environmentally sensitive and cost effective landfill for disposal of nonrecycled waste; *and we have exercised our independence from King County to alleviate the burden on County disposal facilities and to provide rate stability for both residential and commercial customers. Never in recent times has Seattle enjoyed such a broad consensus on handling the City's trash.*³⁷⁹

³⁷⁷ Seattle Engineering Department, “Seattle Solid Waste Management Study: Policy and Development Plan,” January 1986 (SMA/Report #3127).

³⁷⁸ Recycling was broadly supported in the city at this time. The Utility, the City Council, and the Mayor were receiving regular constituent letters urging the city to consider aggressive recycling as an alternative to incineration. The League of Women Voters and the Seattle Municipal League captured the sentiment of many in their statement to Mayor Royer. While noting that an incinerator in Seattle would likely be necessary, they urged the city to “intensify its efforts in terms of time, money and planning resources in the areas of waste reduction (such as packaging legislation), recycling, and composting before making the critical decision on the potential size of any incinerator. This implies the need for solid waste management systems which maximize the ease and efficiency of waste reduction and recycling. The greater the extent to which materials are not introduced into the waste stream, or once introduced are recycled, the smaller the size and cost of any incinerator. We find ourself (sic) in agreement with Mayor Royer that the goal of a 1% annual reduction in the waste stream over the next twenty years is overly modest and lacks the aggressiveness which the city has consistently shown in its planning efforts for an incinerator” (Municipal League of Seattle/King County and the League of Women Voters, Press Release: Statement on the City of Seattle's Disposal Options Project, August 11, 1987; Archive Loc: 4630-02 / Energy - Resource Recovery - Letters and Info 1987 7-13).

³⁷⁹ Letter from Mayor Royer to Council President Sam Smith, October 11, 1988 (SMA/4601-01/4-4). Emphasis added.

Between 1980 and 1988, regional politics became an integral part of the definition of Seattle's solid waste problem. Control of solid waste was transformed from a burden into a responsibility that conferred power and legitimacy. This new understanding of waste was an integral force that shaped the city's desire to emphasize recycling and waste reduction more aggressively. It does not, however, explain why the city ultimately turned away from panacea of energy recovery. Other waste reframings, happening simultaneously, ultimately negated the legitimacy of energy recovery as a solution for the city of Seattle.

While the prospect of waste-to-energy had gotten politicians thinking about garbage as valuable commodity, ideas about waste continued to transform as opposition to incineration coalesced. In theory, as a feedstock for a waste-to-energy plant, garbage had the potential to go from being a significant cost to a modest revenue. While this ultimately proved highly unlikely in practice,³⁸⁰ it was nevertheless an appealing argument for incineration at the time. But opponents of incineration argued that burning waste had hidden costs. In addition to the health and environmental risks posed by municipal waste incineration, there was an opportunity cost to converting all the different materials in garbage into toxic ash and just a little bit of electricity. Incineration opponents thus offered a new view of garbage. It should be understood, they argued, not as a monolithic mass but as a stream of different materials, many of which could have a more productive life if they were reused or recycled.

Waste as a material and temporal problem: The long history and longer future of Seattle's garbage

Within the Sanitary City Waste Regime, waste was whisked to what Jennifer Clapp has called "away places," usually landfills.³⁸¹ Once waste material went "away," it became invisible and irrelevant to

³⁸⁰ Cite some of the incinerator lit

³⁸¹ Jennifer Gabrys, "The Distancing of Waste: Overconsumption in a Global Economy," in *Confronting Consumption*, ed. Thomas Princen, Michael Maniates, and Ken Conca (Cambridge, MA: MIT Press, 2002), 155–76.

most people and policy-makers. In disappearing into the abyss of a waste system, waste materials slip not only out of view, but also, in many ways out of time, too. Once materials become classified as “waste” they lose their unique material properties, and in so doing, become a-temporal. Waste is like death; disposal practices--burning and burial--happen to also be the ways that we dispose the dead.³⁸²

In a very concrete way, because of the anaerobic conditions of modern sanitary landfills, many things deposited in them literally freeze in time; material ceases to decompose and can be unearthed almost perfectly intact generations later.³⁸³ Additionally, with the rise of plastics, waste streams are composed of many materials that relatively permanent. Chemically, many plastics might break into smaller pieces, but they never decompose into constituent organic compounds.³⁸⁴ Despite the fact that our wastes persist indefinitely, though, they more or less cease to exist in our consciousness.³⁸⁵ Once waste materials are removed, they may have a future, but that future—at least as far as municipal waste policy has been concerned—does not matter.

This context makes a material and temporal focus of Seattle’s waste problem definition all the more significant. During the transitional moment when Seattle was, “For the first time unable to dispose of its residents’ solid waste in its own landfill,”³⁸⁶ Seattleites began to reckon with the material and temporal life of garbage directly. Discourse around three key issues elevated the temporal-material identity of waste in ways that ultimately emphasized solutions of recycling and source reduction

³⁸² Gay Hawkins, *The Ethics of Waste; How We Relate to Rubbish* (Lanham: Rowman & Littlefield Publishers, Inc., 2006), 13; Reno, “Toward a New Theory of Waste”; Joshua Reno, *Waste Away* (Oakland, CA: University of California Press, 2015), <http://www.ucpress.edu/book.php?isbn=9780520288942>.

³⁸³ Rathje and Murphy, *Rubbish! The Archeology of Garbage*.

³⁸⁴ See Hawkins, Gabrys, Gregson and others on politics of plastics and materiality of wastes...insert full citations.

³⁸⁵ Robin Nagle, “Garbage: Learning to Unsee” (Lecture, Trash Talk Lecture Series, Peabody Museum, Harvard University, September 14, 2011).

³⁸⁶ Solid Waste Utility Recommendations to the Mayor, September 1987; Archive Loc: 4601-01 Solid Waste Comprehensive Plan (2) 1984-1988 4-5

over disposal. The first of these was the remediation of the two Kent landfills; the previous generation's disposal solution had transformed into a pressing, sensory, and expensive burden for current and future Seattleites. A second factor was the long-term health and environmental risks associated with incineration. Residents framed their concern about these risks as imposing unfair, and unnecessary burdens on future generations. Third, as residents weighed the possibility of an incinerator in their midst, they focused on the specific material composition of the waste stream, emphasizing the opportunity cost of burning organics and other materials that were easily recyclable. In so doing, Seattle residents began to chip away the logic of the disposal paradigm; they redefined waste from a monolithic, a-temporal abstraction into its constituent parts. Fundamentally, waste was recast as a resource for present and future generations.

The redefinition of Seattle's waste stream began in the late 1970s and early 1980s as city officials began to target certain materials for recycling. For instance, the composting program isolated yard waste from the waste stream and reclassified it as a resource for the city.³⁸⁷ Likewise, the City's waste reduction and recycling plan from 1981 identified easily recyclable materials that were ending up in landfills, including paper, metals, and glass.³⁸⁸ In 1980, Jim McMahon, a consultant to the Solid Waste Utility explicitly framed waste as a potential, if nondescript, resource:

the point is to get the mechanism set up for the long-term recovery of resources...such that when the day comes and it's coming - when we have to recover our resources, we'll be ready instead of just starting to plan.³⁸⁹

Similarly, the process of planning for energy recovery recast "waste" as a potential source of energy and municipal revenue. Through these planning efforts, certain materials in the waste stream were

³⁸⁷ News Release for "Use it Again Seattle," May 5, 1980; Archive Loc: 4675-02 Solid Waste, Composting 1980 1-6.

³⁸⁸ Robert A. Lowe and James P. McMahon, "Proposed Recycling and Waste Reduction Strategy for the City of Seattle, Volume I" (Seattle Engineering Department, January 7, 1981), Seattle Public Library.

³⁸⁹ Mike Sato, "Garbage: Getting a Grip on Solid Waste," *Seattle Sun*, March 26, 1980.

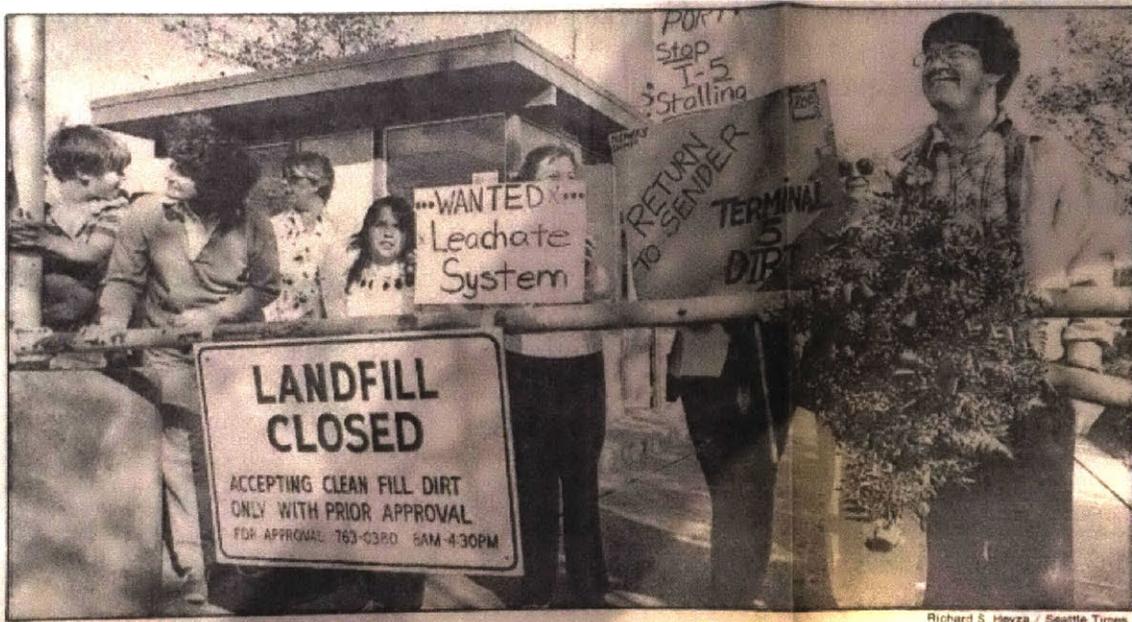
identified and reclassified; but each material, and waste in general, were still abstracted into large categories with little, if any, exploration of unique characteristics or future uses.

As the Kent landfills deteriorated, the material presence of Seattle's waste came into sharper focus. The landfills were repeatedly described in local papers in sensory terms. Most commonly, reporters focused on the olfactory presence of the landfills. But the dumps were also a visual presence. A neighbor of one of the Kent dumps told a local paper, "It's been smelly for years and it looks like a junk shop."³⁹⁰ One particularly big rainstorm in 1982 left a stinking, toxic, anaerobic, forty-foot-deep pool in one of the landfills that neighbors christened "the Black Lagoon."³⁹¹ Ultimately, "stories of neighborhood children wearing protective goggles, hundreds of complaints, and a threatened lawsuit by Kent officials" led Mayor to announce that the second landfill would close a year and half ahead of schedule.³⁹²

³⁹⁰ Susan Goldberg, "City Keeps Kent Dump, But Critics Say It Stinks," *Seattle Post-Intelligencer*, October 19, 1982.

³⁹¹ David Schaefer, "No Tears: Neighbors Celebrate Closing of Landfill," *Seattle Times*, October 1, 1983; David Suffia, "Kent Demands That Seattle Close 2 Garbage-Landfill Sites," *Seattle Times*, July 8, 1983.

³⁹² Duff Wilson, "Midway Dump Is Closed but Controversy Over Landfill's Future Cleanup Continues," *Seattle Post-Intelligencer*, October 1, 1983.



Neighbors of the Midway landfill celebrate its closing by putting up a wreath of 19 black carnations, one for every year it was open.

Figure 4.5. Residents in Kent celebrated the closure of the first of Seattle’s two landfills there by hanging a wreath of black carnations on the gate. Photo Source: *Seattle Times*, October 1, 1983, A9; SPL/Seattle Collection.

After both Kent landfills were closed, Seattle was confronted with the fact that not only was its waste was not “away,” but that it wouldn’t stay in its place. Smells, leachate, and methane migrated beyond the landfill borders, even after they were closed. The *Seattle Times* reported that “...Bobbie Gojenola, who lives just to the west, said she still will worry about water draining into the water table from the dump and flowing toward the nearby elementary school.”³⁹³ Gojenola’s worries, and those of countless other landfill neighbors, were only magnified by chronic and persistent methane leaks at both landfills. Contaminated water and highly combustible methane gas embodied the ongoing material life of all the millions of tons of stuff that Seattle had exported to its landfills in Kent.³⁹⁴

³⁹³ Schaefer, “No Tears: Neighbors Celebrate Closing of Landfill.”

³⁹⁴ Brown, “Methane at Midway Landfill Still Keeps Two Families from Homes”; Jane Hadley, “Neighbors of Landfill Blast City and State,” *Seattle Post-Intelligencer*, December 5, 1985; John Harris, “City Moves to Set the Terms for Buying Homes near Landfill,” *Seattle Post-Intelligencer*, March 26, 1866; Kathy Bunnell Johnson, “Get Rid of Gas Peril at Landfill, Seattle Warned,” *Seattle Post-Intelligencer*, June 29, 1985; Maier, “Our Garbage Rates Could Increase 80%”; Scott Maier, “Seattle to Purchase Landfill for \$1 Million,” *Seattle Post-Intelligencer*, April 5, 1986; Pulliam, “Methane Jeopardizes Day-

In 1986, as the costs of remediating the Kent landfills were coming into focus, the Mayor sent a letter to the City Council President that encapsulated the inherent temporality, and spatiality, of Seattle's garbage problem:

After years and years of studying various options, the time has arrived for the City of Seattle to move into the next era of solid waste management. For more than a half century, we have simply buried our solid waste in the ground, first in Seattle, and when there was no more vacant land here, in the city of Kent. The legacy of those landfills has now become one of our worst problems.³⁹⁵

In this letter, Mayor Royer positioned the current moment between a history of poor waste management decisions, and future burdened with the consequences. The realization that the landfills remained the responsibility of the city also hints at an awareness of the material reality of garbage: it “bites back.”³⁹⁶

While the ongoing saga of the Kent landfills cast the long-term, material realities of waste into sharp relief for Seattleites, the most prominent alternative—incineration for energy—posed new concerns for many. Some residents reacted in classic NIMBY fashion, recommending for instance that the city revert to a regional approach based on waste export rather than build an incinerator in Seattle.³⁹⁷ But many, many more raised substantive concerns and offered serious alternatives. Many constituents worried that elected officials and city staff were not thinking beyond the immediate crisis. While city officials up through the late 1980s argued that the incinerator option was a long-term solution to the landfill crisis, many constituents viewed the incinerator as short-sighted and dangerous. One constituent wrote to the city council with an eye towards the very big picture:

Care Center”; Richard Seven, “Easing Fears near Midway Landfill,” *Seattle Times*, April 2, 1986; Wilson, “Garbage Rates Going Up to Pay Cost of Fixing Midway Landfill.”

³⁹⁵ Letter from Mayor Royer to Council President Sam Smith, May 26, 1986; Archive Loc: 4601-01 Solid Waste Comprehensive Plan (2) 1984-1988 4-5

³⁹⁶ Gille, *From the Cult of Waste to the Trash Heap of History*.

³⁹⁷ For example, as one resident put it: “The proposed Southend site is stepping on my toes, I live here. We of the Southend have had many crosses to bear in the past ten year. Robberies, Rapes, Assaults, Murders, Rock Houses and now THIS. Really we do not need any more.” (Letter from June E. Cappetto to Councilman George Benson, September 6, 1987; SMA/4630-02/7-13).

Very soon, you will be making a decision about Seattle's garbage that will impact the ecological balance of our planet for all time. I urge you to vote against incineration of our garbage. We can no longer afford short term solutions to long term problems...there are other methods of dealing with garbage, please take the extra time to explore all possible solutions.³⁹⁸

This sentiment was echoed by many others; the expediency of the incinerator option was seen as at odds with the long term environmental consequences, and in conflict with the material resources in the waste stream (see Figure 4.6 for another example).

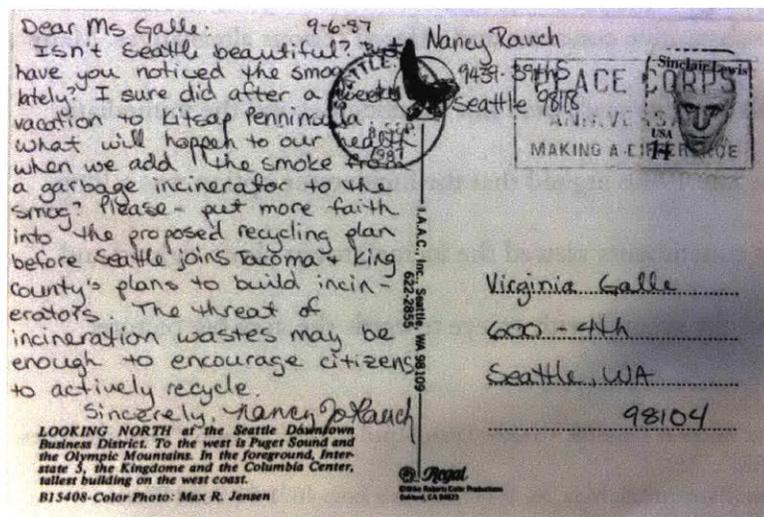
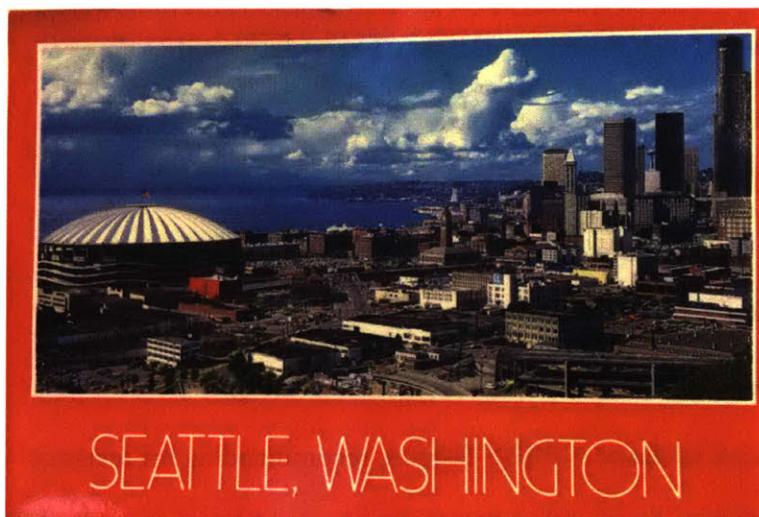


Figure 4.6. A postcard sent to City Councilor Virginia Galle in 1987 urging for recycling instead of incineration. Source: SMA/4630-02/7-13

³⁹⁸ Letter from Richard Vincent to the Seattle City Council, July 29, 1987; Archive Loc: 4630-02 / Energy - Resource Recovery - Letters and Info 1987 7-11

Residents raised specific and targeted critiques of incineration that rested on the material to be burned. In particular, residents opposed to incineration viewed it not only as a toxic folly, but as squandering material resources. “A mass burn incinerator is an attempt to deal with symptoms,” one resident wrote to the Mayor,

but is not a solution to the real problem of waste management. Incineration can further degrade the air quality of Seattle, release toxic substances into the atmosphere, and create new disposal problems with hazardous ash. . . Waste reduction thru recycling should be aggressively pursued before planning and designing any incineration plants.³⁹⁹

A flyer developed by a residents’ organization in south Seattle, where the incinerator was likely to be located, cast energy recovery as a wasteful threat: “Because energy can be generated by burning garbage, incineration has been given the name ‘energy recovery’. But don't let the name fool you,” the flyer stated, and continued:

Burning is a very inefficient means of energy or resource conservation when compared to waste reduction or recycling. In fact, incineration can actually pose a threat to conservation, for once an incinerator is built, it creates a demand for a steady supply of waste, much of which could be recycled and eliminated from the waste stream.⁴⁰⁰

Building on the strong recycling ethic in Seattle and the recycling and composting planning the Utility had done in the late 1970s and early 1980s, the city was still considering recycling as a cornerstone of its waste plan. From the mid-1980s on, the utility and the mayor, picking up on citizen recommendations, explicitly argued for an incinerator sized to accommodate Seattle’s residential and commercial waste streams *after* recyclables had been removed.⁴⁰¹ But residents from across the city argued that the proposed recycling goals were unambitious and that the city was on a path to waste millions of dollars in addition to the material resources to be burned. One letter to

³⁹⁹ Letter to Mayor Royer from Curtis Nimz, July 27, 1987; Archive Loc: 4630-02 / Energy - Resource Recovery - Letters and Info 1987 7-11

⁴⁰⁰ “Don’t Let Seattle Get Burned” Flyer, sent to the City Council from Penny Danna, 1987 (SMA/4630-02/7-13)

⁴⁰¹ Solid Waste Utility Recommendations to the Mayor: A System to Manage Solid Waste, 1987 (SMA/4601-01/4-5)

Councilor Virginia Galle, the head of the Environment subcommittee of the City Council, admonished the city to:

Put your money where your mouth is. The city is planning on spending up to \$200 million on an incineration plant while spending roughly \$1.5 million for recycling each year. Joe Garbarino, private owner of the largest recycling facility in the country, estimated that Seattle could recycle fifty percent of its waste stream within five years if it would make the capital investments necessary to separate relevant materials from the waste stream. Not ten years, not twenty years, five! Even with the proper capital investment the city would spend only a fraction of what it would for a burn plant. If the solid waste utility put half the time, money and energy into recycling that it has put into greasing the tracks for incineration, we would see immediate and drastic improvements in waste reduction.⁴⁰²

Others explicitly argued that the city was in danger of misusing resources: “I would like to see all recyclables diverted from the waste stream and recycled,” wrote one resident to the Mayor.

It is a misuse of resources to incinerate materials which can be used again. I realize it will require a great deal of public education, but I would like to see the city set its long term goals for recycling higher than the proposed 40%. Through a combination of source separation of recyclables and separation of recyclables at the incineration plant, I feel we can do better than 40% recovery of recyclables.⁴⁰³

Many residents flipped the narrative of the waste problem, arguing that incinerators were the problem, rather than the garbage. In some cases, this shift was quite explicit. For instance, one resident argued:

Incinerators are problems—air quality, the release of extremely toxic fumes, the problem of disposal of the very hazardous ash are examples. This is a very serious decision, and one with potential adverse effects. Please emphasize recycling in the planning for incinerators, require recycling. Also please set the most stringent safety requirements.⁴⁰⁴

Others argued that the incinerator was a “shotgun approach,” and that the city could, instead, view garbage as an “opportunity to enhance quality of life.” Like many members of the public, the

⁴⁰² Letter to Virginia Galle from Ed Hebbert and Martha Taylor, July 27, 1987 (SMA/4630-02/7-11)

⁴⁰³ Letter from Nancy Luenn to Mayor Royer, July 31, 1987 (SMA/4630-02/7-11)

⁴⁰⁴ Letter from Kathy Jordan to Mayor Royer, August 5, 1987; Archive Loc: 4630-02 / Energy - Resource Recovery - Letters and Info 1987 7-14

authors of this particular letter emphasized specific actions including a ban on non-recyclable packaging, increased municipal recycling, incentives for composting and a tax on disposable goods equal to the cost of landfilling them at the end of their life.⁴⁰⁵

Underlying the concerns and recommendations of Seattle residents was the argument that garbage could be something other than a burden, and that Seattle residents were capable of participating in the solution. These two threads fundamentally recast both the definition of waste itself, and the role of city government in waste management. If waste was a potential resource with immediate and long-term potential to increase the wellbeing of the city, then the role of city government was as a steward. The solid waste utility should be focused on shifting incentives and providing convenient options for material recovery, rather than focusing on removal and disposal.

Shifting roles and responsibilities of state and citizens

The identification of responsible parties is a key part of problem definition, (explored in depth in Chapter 2). As the definition of the solid waste problem in Seattle was redefined to include understandings of the regional balance of power and the temporal and material imprint of garbage on the landscape, so too was there a shifting sense of who should be responsible for the garbage problem. This shift resulted in an inversion of responsibilities of citizens and state. Citizens, originally cast as customers, even subjects, became active participants in their own waste management. Simultaneously, the city government shifted from being a service provider that prioritized technical efficiency, to being a facilitator and a resource steward. Its responsibilities became both to provide services and infrastructure, to cultivate channels for material reuse and recycling, and to actively reshape perceptions, knowledge, and practices of citizens.

⁴⁰⁵ Letter from Sid and Laura Maroney to Mayor Charles Royer, July 20, 1987; Archive Loc: 4630-02 / Energy - Resource Recovery - Letters and Info 1987 7-11

The Sanitary City waste system revolutionized municipal waste management by transforming waste management from an individual concern to a municipal service. Within the Sanitary City Waste Regime, citizens were clients, the government the service provider.⁴⁰⁶

In Seattle, this relationship was somewhat moderated by the fact that many residents recycled independently. But independent and voluntary recycling practice was balanced by the practice of backyard collection until well into the 1980s. This meant that residents simply left their cans in alleys or garages; they didn't even have to drag their cans to the curb. Thus, they were spared reckoning with awkward, overflowing cans; and they didn't have to observe their wastes in relation to their neighbors'. It was, in the words of Diana Gale, a "silent service."⁴⁰⁷



Figure 4.7. As rates escalated and the city eventually abandoned backyard pick up, a local cartoonist parodied profligate wasting as a conspicuous signal of wealth. *Seattle Post-Intelligencer*, 1986; SPL/Seattle Collection.

⁴⁰⁶ It must be noted that this client-service provider relationship is not universal. In many, many small cities and towns, people still bring their garbage to dump or transfer station. Some of these places in Massachusetts, like Acton and Wellesley, have developed sophisticated recycling and reuse programs where residents separate their wastes into highly specific categories—much more effective than single stream collection programs. In large cities where most people live in multi-family buildings, people may drop their wastes into common dumpsters, and then building staff are responsible for its removal. The client-service provider relationship, though, was dominant in Seattle and many mid-size cities where the bulk of residents lived in single family or small multi-family housing and had so had a direct relationship with garbage collection.

⁴⁰⁷ Gale, Personal Interview.

Through the transformation of solid waste management in the city, this changed. Both citizens, the Utility, and elected officials coalesced around the idea that residents should have more responsibility, and that the city's role should be redefined. As explored in the many quotes in the preceding section, Seattle citizens themselves argued that they should be expected to play a larger role in the system by recycling and composting more. Further, the conventional wisdom in the recycling community at the time was that recycling behavior was a habit and a culture that could be cultivated; as one recycling professional from New York City told the annual Recycling Congress in Seattle in 1986, "Punitive measures are perfectly valid when the goal is to protect the public good, but peer pressure is a much more effective measure."⁴⁰⁸ The city government in Seattle responded to this context by working to determine how city services and infrastructure could encourage and support citizen participation in recycling and waste reduction. The Mayor, the Utility, and the City Council all aligned to support the "citizens' resolve to recycle."⁴⁰⁹

By the start of the 1980s, despite the tradition of back-yard pickup, city residents were, by all accounts, good recyclers, a fact that convinced many that Seattle residents would be able to bear increased responsibility for waste sorting in the home. By 1978, the Utility estimated that 14% of the city's waste stream was being independently recycled. By the early 1980s, this had climbed to 20%, far higher than any other U.S. city. This was all done without support from the city government. The robust private recycling industry, and that fact that city residents had proven that they were capable of diverting significant amounts of material from the landfill on their own contributed to the sense that individuals could and should play an active role in solving the city's disposal problem. This sentiment was reflected in policy advocacy work by groups like the League

⁴⁰⁸ Joan Edwards, quoted in Pete McConnell, "Peer Pressure Holds Key to Successful Recycling Attempts," *Seattle Post-Intelligencer*, September 25, 1986.

⁴⁰⁹ Letter from Mayor Royer to Council President Sam Smith, October 11, 1988 (SMA/4601-01/4-4); Memorandum from Diana Gale to Councilmember George Benson, September 15, 1988 (SMA/4601-01/4-4).

of Women Voters. For example, in a letter in support of the city's 1980 composting program, the League wrote:

We believe that the private sector, including families and neighborhoods, should be encouraged to reduce the burden of governmental agencies in this effort in every way possible...The League supports the proposed effort towards educating citizens in environmentally beneficial practices such as composting. Public awareness is a prerequisite to success. Backyard composting and neighborhood programs to enhance this process of reducing waste should be encouraged as a first step in solving the overall problem of too much waste.”⁴¹⁰

The problem, according to the League's statement, was “too much waste,” and the League sought to shift responsibility for solving the problem from the public sector to the private sector. In their framing, the public sector becomes, instead of a service provider, a facilitator and an educator.

As this reasoning gained traction in public discourse, the Utility and the Mayor maintained a strong position that recycling should be voluntary. This was at least in part a legacy of previous planning efforts; the city's Waste Reduction and Recycling plan from 1981 was strongly oriented to providing education to encourage recycling behaviors. As the city's focus shifted away from energy recovery and towards recycling and waste reduction, the emphasis on voluntary programs. By the mid-1980s, when the City Council, Mayor, and Utility had cohered around a 40% recycling goal, the Mayor began to characterize the role of the city thus: “If we are to attain our goal of 40% level of recycling, we must change our present collection system to make recycling more convenient for the City's households.”⁴¹¹ The idea was that if the programs were easy enough, residents would participate enough to meet ambitious goals.

⁴¹⁰ Memo from the League of Women Voters to the Water and Waste Management Committee of the City Council, February 26, 1980; Archive Loc: 4675-02 Solid Waste, Composting 1980 1-6

⁴¹¹ Letter from Mayor Royer to Council President Sam Smith, May 28, 1986; Archive Loc: 4601-01 Solid Waste Comprehensive Plan (2) 1984-1988 4-5

As the recycling goal grew more ambitious, and a coherent plan emerged to manage Seattle's waste without an incinerator, the Mayor's position remained consistent:

The management plan we have agreed on is exciting and aggressive. Through the plan we have committed the City to provide convenient programs to accommodate the citizens' resolve to recycle; we have chosen the use of an environmentally sensitive and cost effective landfill for disposal of nonrecycled waste; and we have exercised our independence from King County to alleviate the burden on County disposal facilities and to provide rate stability for both residential and commercial customers. Never in recent times has Seattle enjoyed such a broad consensus on handling the City's trash...I believe we must continue to push with great energy if we are to build a system to recycle the major portion of Seattle's waste stream."⁴¹²

But even though the emphasis on voluntary citizen participation remained consistent, there had been a distinct evolution in the role the city was playing. In the above quote from a letter to the City Council, the Mayor positions the city as "accommodating" demands of Seattle residents; but importantly, shifting some responsibility for waste management onto citizens did not, as has been observed in the governance and splintering urbanism literatures absolve the local government of its responsibility. Rather Seattle "committed" itself to providing the infrastructure and programs necessary to allow resident recycling to succeed. So while the emphasis on recycling was driven largely by resident demand, the city invested heavily in outreach, education, and the development of programs that would be effective, convenient, and robust.

The City Council Environment Committee, responding to constituent demand, was more aggressive. They pushed back against the Mayor and the Utility's emphasis on voluntary recycling, arguing that given the ambition of the city's vision, recycling should be mandatory. Perhaps concerned about the enforcement of a mandatory program, or about the degree of change already occurring in the system, Diana Gale argued to the City Council that

⁴¹² Letter from Mayor Royer to Council President Smith, October 11, 1988; Archive Loc: 4601-01 Solid Waste Comprehensive Plan (1) 1984-1988 4-4

we prefer voluntary programs over mandatory approaches. The citizens of Seattle are responding enthusiastically both to existing recycling programs and to the prospect of expanded services. We think they should have the chance to voluntarily become the world leaders in recycling without behavior change being legislated upon them.⁴¹³

The mayor took this argument further, arguing specifically in relation to yard waste separation that “Forcing mandatory . . . separation on citizens before they have had a chance to respond may alienate some customers. Requiring separation without budgeting for an enforcement program will make them cynical.”⁴¹⁴

The City Council Staff ultimately concurred with Diana Gale and Mayor Royer, and recommended that the Council pursue a voluntary recycling approach; this approach was ultimately confirmed by resolution in 1988.⁴¹⁵ As a contingency, the option to move to mandatory recycling, should it prove necessary, was also enshrined in the resolution. Ultimately, the city did move to mandatory yard waste separation, then mandatory recycling, and most recently, mandatory food scrap separation. But throughout the debate about voluntary recycling, citizens, advocacy groups, many city government officials all aligned around newly conceived roles and responsibilities for both individual and governmental actors in the waste system.

Conclusion: A new problem and a new solution

Over the course of the 1980s, the problem of waste migrated from a straightforward disposal problem to a complex spatial, political, temporal, and material resource problem. Public officials, at the urging of citizens, began to understand garbage as a valuable material that not only contained a variety of potential resources, but also conferred power to whoever controlled it. As the definition

⁴¹³ Letter from Diana Gale to Councilmember George Benson, September 15, 1988; Archive Loc: 4601-01 Solid Waste Comprehensive Plan (1) 1984-1988 4-4

⁴¹⁴ Letter from Mayor Royer to Council President Sam Smith, September 22, 1988; Archive Loc: 4601-01 Solid Waste Comprehensive Plan (1) 1984-1988 4-4

⁴¹⁵ City of Seattle, “Resolution 27867” (1987).

of garbage and consequently the garbage problem shifted, so too did the understanding of who was responsible for the solution. The party responsible for solving the problem shifted from the city government alone, to the city government in support of citizens. The process of problem redefinition occurred through both formal planning processes and informal dialogue among state and citizen actors.

Through this process, Seattle defied the dominant logic of neo-liberal governance and privatization that characterized both solid waste practice and many arenas of public management at the time. Seattle did ask more from its citizens, and also from its contractors, it should be noted. But the city never abdicated its role or responsibilities, but rather reframed them to accommodate a new and expanded role for citizens. Through these actions, the city was also defying the dominant national waste regime. While the waste industry was organizing to make waste more invisible, more distant, and more profitable, and manufacturers and retailers were developing and pushing increasingly disposable consumer goods, Seattle's solid waste planning pushed back, demanding that individuals become more engaged, not less, with the processes of wasting.

CHAPTER 5

Outside the Frame: The Non-Planning of Solid Waste in Boston

My job as chief policy advisor...was to make sure that we had an aggressive policy agenda and that issues that came our way were managed well. Certainly trash disposal was in the latter category. We didn't show up saying "oh lets change the world, let's do trash."⁴¹⁶

Well, you know, nobody runs for governor thinking they are going to tackle solid waste...for an issue we spent as much time on as we did in governing, that was one that was probably not a front burner issue in the campaign. Boston Harbor was.⁴¹⁷

Introduction

Boston is a city known for impressive infrastructural feats. Much of the city is built on constructed land. The river at its northern edge almost completely controlled, no longer the unpredictable tidal sluice it once was. The nation's earliest subway was carved in the heart of the city. It was a leader in urban renewal, razing entire neighborhoods for modernist developments and highways. And it was a global leader in highway deconstruction when it, in partnership with the state, buried route 93 and reconnected downtown Boston to the long isolated waterfront.

Many of Boston's infrastructural works have been controversial and overpriced. Some, like the urban renewal of the West End, have been assessed in retrospect to have been sorely misguided. Some, like the construction of City Hall in the wreckage of the old Scolley Square neighborhood, have earned as many admirers as critics. Still others, like the Big Dig, have so qualitatively improved the city that even the corrupt and mysterious processes through which it was imperfectly built cannot entirely undermine the positive impacts on the landscape of the city. In all of these efforts from the filling of Back Bay to the razing of Route 93, Boston's leaders had big ambitions.

⁴¹⁶ Neil Sullivan, Personal Interview, May 9, 2016.

⁴¹⁷ Alden Raine, Personal Interview, May 13, 2016.

Case overview

Garbage, unlike water, sewers, transportation, open space, and housing, has rarely received concerted public attention in Boston. It has remained almost entirely “invisible, part of the background for other kinds of work.”⁴¹⁸ The period of the 1980s was a notable exception. Landfill capacity in Eastern Massachusetts was shrinking, and municipalities were faced with astronomical costs to clean up old, unlined dumps that were leaching toxins. Siting new disposal infrastructure was increasingly difficult as both environmental regulation and community opposition had increased. Boston, with no local disposal capacity of its own, was dependent on external disposal infrastructure, and costs were rapidly escalating for the city. At the city and state level, as the crisis grew more urgent, leaders reacted.

Boston Mayor Kevin White proposed to build a massive state-of-the-art waste-to-energy incinerator right in the middle of town. The move, he argued, would give the city some measure of control over this necessary service. The proposal ultimately failed, but the moment provided a policy window. Garbage was on the agenda; it had the attention of city and state policy makers, local activist communities, and the local press. In the year following Mayor White’s initial proposal, Ray Flynn was inaugurated as the city’s new Mayor. The Flynn administration came into office hesitant about the incinerator proposal. Within his first term, the Mayor decided to pursue a plan of waste export rather than build a garbage burner in the middle of the city. Shortly after that decision was made, the Flynn administration reversed itself, and restarted plans and negotiations for the incinerator. Ultimately, the incinerator proposal could not overcome a variety of obstacles, and at the very end of Flynn’s first term, the incinerator proposal died again. The Flynn administration signed new contracts for garbage export, and then initiated a minimal curbside recycling program.

⁴¹⁸ Star, “Ethnography of Infrastructure,” 90.

In the following chapter, I will explore how the city responded to the opportunity presented by the garbage crisis. When Mayor White first proposed the incinerator, he was seeking to solve a disposal problem. This framing held fast through a change in Mayoral administrations and nearly a decade of public discourse about garbage. When Mayor Flynn took office in 1984, garbage quickly became central issue of his administration. However, garbage itself remained defined by its relation to other forces and factor. It became the medium for power struggles among elected officials, but did not receive direct attention or a formal planning effort. Throughout the decade it remained subsidiary to other interests, ultimately taking the path of least resistance straight out of town. By the time the city initiated its first curbside recycling program, it was presented as a last resort effort to solve a disposal problem that hadn't yet gone away. These factors taken together reinforced the Weak Recycling Waste Regime, despite many opportunities to resist it.

The Disposal Problem

By the mid-nineteenth century, Massachusetts had developed a reputation as a state with relatively good public health. Both the City of Boston, and the State of Massachusetts embraced the Sanitary City movement and invested in research and practices to establish clean and salutary urban environments.⁴¹⁹ As early as 1905, Boston was gathering statistics on waste generation by season and neighborhood, and planning service accordingly.⁴²⁰ At that time, and for decades onward, Boston was able to rely primarily on local dumps and incinerators for waste disposal. But by the 1970s, local disposal capacity was running out.

⁴¹⁹ Melosi, *The Sanitary City; Environmental Services in Urban America from Colonial Times to the Present*.

⁴²⁰ Rudolph Hering and Samuel Greeley, *Collection and Disposal of Municipal Refuse* (New York: McGraw-Hill Book Company, Inc., 1921), 90.

In 1975, Boston's only incinerator (pictured in Figure 5.1) was ordered to cease operations by the Suffolk Superior Court due to severe and chronic air quality problems. The incinerator, which had been constructed in 1960, had no modern pollution prevention technology and was repeatedly cited for emissions violations.⁴²¹ It was the only facility receiving residential waste within city boundaries, so when it closed, Boston began to export all of its residential waste to regional landfills and incinerators.

Shortly thereafter, in 1980, the Gardner Street landfill in West Roxbury closed. It was the last remaining landfill in the city, and received non-hazardous commercial MSW from Boston businesses. With the closure of Gardner Street, Boston was left with no disposal capacity within city-limits. All waste, residential and commercial, was then shipped to incinerators and landfills outside the city.⁴²² Boston's business community, felt the sting of increased waste transportation and tipping fees, started to pressure the city and the state to develop more disposal capacity.

⁴²¹ Wendy Fox, "Problem: Finding the Best Way to Throw It Away," *Boston Globe*, May 28, 1983; Mayor's Office of Energy Conservation, *The Incinerator at South Bay, Its History and Future* (Boston, MA, 1978).

⁴²² Fox, "Problem: Finding the Best Way to Throw It Away."



Figure 5.1 Top: The interior of the South Bay Incinerator, 1970. Middle: Heat from the South Bay Incinerator, 1970. Bottom: South Bay Incinerator and the SouthEast Expressway, 1974. Photos by Spencer Grant, Boston Public Library Spencer Grant Collection.

Landfill operators across the region, wary about RCRA regulations and aware that municipalities were successfully opposing new landfill proposals, worried about their ability to site new facilities. They started raising tipping fees to protect their existing capacity. At the same time, many existing landfills were wildly out of compliance with state and federal laws. More than 40 municipalities in Eastern Massachusetts were using unapproved landfills that had little to no barrier for capturing leachate and protecting ground water, and municipalities were increasingly aware of water contamination from dumps. Many communities in the state did not begin household hazardous waste collections until the mid-80s. For generations, Massachusetts dumps had been accepting paint, caustic cleaners, batteries, and dozens of other toxic materials that were now, in the words of Zsuzsa Gille, “biting back,” in the form of contaminated groundwater and poisoned pets and wildlife, as well as budget-breaking cleanup costs and forced closures of landfills. These were not new problems: regulators had been overlooking these practices for years: losing disposal capacity was more worrisome than potential pollution from dumps. But once the pollution materialized, the costs of clean up compounded the loss of capacity, throwing Massachusetts’s solid waste systems into crisis mode.⁴²³

The problem was particularly acute for Boston, which by 1983, was already spending a third of its Public Works Budget on garbage collection and disposal.⁴²⁴ Lacking any disposal capacity itself, the city was entirely dependent on one incinerator in nearby Saugus, and the rapidly disappearing network of dumps in the state. In the summer 1983 Boston’s Mayor, Kevin White, finally acted on the advice of his Public Works director, Joe Casazza, and solicited proposals for a municipal

⁴²³ Chris Chinlund and Peter Sleeper, “Eastern Mass. Landfill Crisis: The Symptoms Are Growing,” *Boston Globe*, May 13, 1984; Jerry Ackerman, “Threats to Water Purity Mounting,” *Boston Globe*, October 15, 1985, sec. Metro/Region; Jerry Ackerman, “Homeowners Are Dumping Toxic Wastes,” *Boston Globe*, November 12, 1984; John Milne, “Questions of Safety Raised over Leaking N.E. Landfills,” *Boston Globe*, May 11, 1986, sec. National.

⁴²⁴ Boston Municipal Research Bureau, “The Mayor’s FY 1983 Budget Recommendations,” July 16, 1982, <https://archive.org/stream/mayorsfy1983budg00bost#page/n0/mode/2up>.

incinerator to help decrease Boston's dependence on external disposal capacity and to contain costs.⁴²⁵

As the proposals rolled in in 1983, Mayor White's administration was drawing to a close. He pushed the City Council to sign an agreement with two private firms, Air Products and Chemicals of Allentown, Pa., and Browning-Ferris Industries of Houston (American REF-Fuel), for the construction of an incinerator at the South Bay location of the city's old incinerator. At the time, some city councilors had concerns about incineration, but the council was generally attracted to the potentially substantial cost savings to the city.⁴²⁶ In general, political and technical leaders in the city and the state viewed waste-to-energy incineration, often dubbed "resource recovery," as environmentally superior to landfilling.⁴²⁷

Mayor White's successor, Ray Flynn, who would take office on January 3, 1984, was not eager to accept the solution proposed by his predecessor, citing concerns about public health impacts on the neighborhood.⁴²⁸ But the tenor of the waste management situation in the state was becoming more urgent. On July 10, 1984, a parade of garbage trucks from private haulers and waste managers all over the state rumbled around Boston Common to protest the rapidly diminishing landfill space in Massachusetts. The protestors argued that lack of landfill capacity was making it increasingly difficult for them to do their jobs and that the state should make it easier to open new landfills.⁴²⁹

⁴²⁵ Fox, "Problem: Finding the Best Way to Throw It Away"; M. E. Malone, "Boston's Fixture in Public Works," *Boston Globe*, February 29, 1988, sec. Metro.

⁴²⁶ Ed Quill, "Flynn Asks What the Rush Is on OK for Waste-to-Energy Plant," *Boston Globe*, December 14, 1983, sec. Metro.

⁴²⁷ Jerry Ackerman, "Environment; Making Energy from Our Trash," *Boston Globe*, June 11, 1984, sec. Science & Technology; Fox, "Problem: Finding the Best Way to Throw It Away."

⁴²⁸ Quill, "Flynn Asks What the Rush Is on OK for Waste-to-Energy Plant."

⁴²⁹ "Trash Haulers to Circle Common Today in Bid for More Landfills," *Boston Globe (1960-1984)*, July 10, 1984, sec. Television & Radio.

The protest got the attention of the Dukakis administration, which was already considering a variety of waste issues. The Administration shortly thereafter announced a plan that would limit the ability of municipalities to use home rule to reject proposed disposal facilities.^{430, 431}

By 1985, however, no progress had been made on the landfill shortage in Massachusetts, and there was no consensus among state lawmakers about how to proceed. Public perception was that the state was dragging its feet in providing resources for remediating leaching landfills, and for supporting programs or policy that would ameliorate state-wide disposal crisis.⁴³² Further, there was some suspicion that the private sector was exercising undue influence in crafting the state policy direction on waste management.⁴³³ Under the guidance of the Department of Environmental Quality Engineering (DEQE), the state was contemplating a 25-50-25 by 1990 plan, under which 25% would be recycled, 50% incinerated for energy, 25% landfilled, but it made no concrete regulatory steps towards this goal.⁴³⁴

In this context of crisis and uncertainty, Mayor Flynn's administration in Boston was continuing to explore whether to move forward with Mayor White's incinerator plan or to renegotiate the contracts for exporting the city's waste. The state had warned that the incinerator bid would not meet state air quality standards, but this did not put the city off its pursuit of the WTE plant entirely.⁴³⁵ Mayor Flynn continued to consider two proposals for waste management: an export

⁴³⁰ Peter Sleeper, "Dukakis to File Bill to Smooth Way for Landfills," *Boston Globe*, July 11, 1984.

⁴³¹ Later in 1984, the state began to articulate a more comprehensive policy, but it ultimately did not follow through on any of the legislative proposals made immediately after the protest.

⁴³² Boston Globe, "Editorial: The Politics of Waste Disposal," *Boston Globe*, May 3, 1985, Third Edition edition, sec. Editorial Page.

⁴³³ Sleeper, "Dukakis to File Bill to Smooth Way for Landfills."

⁴³⁴ James Simon, "State Still in Quandary over Garbage," *Boston Globe*, April 22, 1985, Third Edition edition, sec. Metro.

⁴³⁵ Letter from Richard Chaplin, DEQE to Clifford Jessberger, American REF-Fuel, January 18, 1985; Archive Loc: Casazza Files/Box 32/WTE/Folder - American REF-Fuel, Inc.

plan that relied predominantly on incinerators outside the city, and a local resource recovery plant at the South Bay industrial site. The export plan was considerably more expensive.⁴³⁶ While the Flynn administration was supportive of recycling in theory, neither of the proposals featured concrete programs for recycling or waste reduction; the city argued that recycling was a “percentage game;” regardless of how much was recycled, there would always be a substantial portion that needed disposal, and that is where official attention was focused.⁴³⁷

As landfill capacity shrank and the incinerator proposal took shape, public officials and the media were consistent in their problem framing: the problem was a lack of disposal capacity that was driving up waste management costs. While the national discourse at the time, as discussed in Chapter 3 was starting to forge links between waste and consumption, Boston’s mayoral administration, as well as other actors influencing decisions about solid waste in the city, consistently emphasized disposal. Even in conversations about recycling, officials placed emphasis on the stream of material that would remain after recycling. Mayor Flynn frequently reminded reporters that the real work of the city was to solve the disposal question:

“Flynn asserted yesterday that even if the recycling center could meet the Dukakis administration's goal of handling one-third of the city’s daily trash output of 1,500 tons, the city would still be left with the costs of shipping the overflow to existing incinerators in other communities.”⁴³⁸

“But Flynn, in his statement, said that as much as 85 percent of Boston's trash ‘will not be recycled under any plan. Boston needs a solution for all of its trash. We cannot accept recycled concepts. We need real plans and real solutions that address the entire trash issue.’”⁴³⁹

A similar understanding of the garbage problem can be gleaned from state officials. Although some

⁴³⁶ Ed Quill, “Officials Say Plan to Take Solid Waste out of City Costs More,” *Boston Globe*, July 25, 1985, sec. Metro.

⁴³⁷ Sullivan, Personal Interview.

⁴³⁸ Peter Sleeper, “Flynn, Dukakis Reach No Accord on Trash Disposal, Money at Issue,” *Boston Globe*, December 24, 1987, sec. Metro.

⁴³⁹ Peter Howe, “Flynn Derides Dukakis Role in Hub Trash,” *Boston Globe*, December 22, 1988, sec. Metro.

in the Massachusetts Department of Environmental Quality Engineering (DEQE) were pushing hard for strong state support of recycling, the Governor's administration was always viewed recycling as a companion to disposal. Al Raine, a top aide to Dukakis, and Jamie Miller, a recycling expert at DEQE emphasized the non-recycled portion of the waste stream. For example, characteristic statements to the local press looked like these:

Alden Raine, a top Dukakis aide, said last night that the state is building five recycling centers. But for now, he said, recycling will be able to eliminate a maximum of 30 percent of the garbage. The rest should go to safe landfills or be burned in incinerators equipped with scrubbers, he said.⁴⁴⁰

Even with an ambitious program, however, at most 50 percent of wastes can be recycled. The rest must be disposed in other ways -- preferably in trash-to-energy plants, Miller said.⁴⁴¹

At the time, there was no existing recycling industry in Massachusetts to advocate for recycling. Voices from the solid waste industry, unsurprisingly, also dialed in on the disposal question. In particular, representatives of the firm seeking to build the resource recovery plant repeatedly gave "expert" testimony to the local papers about the risks of pursuing recycling without a reliable plan for resolving disposal. In one of the more emphatic statements, Peter Watson, a representative of American REF-Fuel, told the *Boston Globe* that aggressive recycling programs had "never been accomplished. It is absolute folly to pretend you can rely on untried means of waste disposal in the face of the enormous quantities that beg for environmentally sound disposal."⁴⁴²

The result of this emphasis from officials at all levels was a clear consensus, at least in the public discourse shaped by the local press. "The trash dilemma is straightforward," the *Boston Globe* reported in 1988. "Even if the state someday reaches its goal of recycling 25 percent of its wastes,

⁴⁴⁰ Larry Tye, "Coalition Advocates Recycling as Alternative to Incinerators," *Boston Globe*, August 7, 1987, sec. Metro.

⁴⁴¹ Larry Tye, "Trash Plant Is Good Neighbor, Many Say," *Boston Globe*, May 20, 1986, Third Edition edition, sec. Metro.

⁴⁴² Tye, "Coalition Advocates Recycling as Alternative to Incinerators."

the rest still must be disposed of. And there are only two ways to do that: Bury it in a landfill or burn it in an incinerator.”⁴⁴³

The Flynn administration worked actively to frame the solid waste problem in just those terms used by the *Globe*. Neil Sullivan, the Mayor Flynn’s policy chief during that era recalled in an interview that:

...this was a question of landfills versus incinerators, and this was a question of in town versus out of town. Should we be responsible for our own trash, or should we send it elsewhere? That’s one of the questions. And should we bury it or should we burn it was the other. We tried to frame the community conversation that way. In town or out of town, and landfill versus incinerator.⁴⁴⁴

The question of garbage, thus, turned on disposal. Approaches that reduced the disposal burden were welcome in the discussions, but for decision-makers, solving the disposal problem was their fundamental responsibility. It is a testament to the power of the Sanitary City Regime and the force it exerted in shaping the larger Waste Regime, that municipal officials in Boston keenly felt a civic obligation to ensure garbage disposal. As can be seen in the quotes above, policy makers, particularly at the city level, felt that an emphasis on alternative waste management strategies, such as recycling, would mean an irresponsible side-stepping of the disposal question. It is in some ways surprising, though, given the fact that garbage was on the policy-making agenda for long, in a place that has been otherwise open to experimentation and visionary planning, that policy-makers held so fast to an archaic problem frame. Part of the explanation for this lies in the fact that even though garbage was on the agenda, it was not actually the object of planning attention.

⁴⁴³ Larry Tye, “Mass. Dilemma: Taking out the Trash,” *Boston Globe*, June 9, 1988, sec. Metro.

⁴⁴⁴ Sullivan, Personal Interview.

Garbage as a relational object: the clash of priorities and state power through wastes

Despite prominence of garbage in the local press and pressing garbage-related questions working themselves through state and local policy machinery, garbage itself did not drive decision-making. Throughout the 1980s, garbage remained a “negative / relational” object, in Sarah Moore’s terms.⁴⁴⁵ It was not defined by any quality inherent to itself; instead its meaning derived from its constitutive relationships with other objects and priorities. Though waste managers and contractors may well have had some knowledge about waste composition and details about generation, those material details did not play a role in waste management decisions. Key decisions that shaped Boston’s waste management approach were driven instead by opportunities for economic development, the clean up of Boston Harbor that ultimately rested on the relocation of the Suffolk house of correction, and power struggles among politicians and levels of government.

Garbage and the politics of jobs

The so-called green-brown tension has often plagued environmentally motivated policy initiatives. Industry has successfully driven a narrative of environmental protection as “job-killing” for decades, and even dyed-in-the-wool environmentalists have critiqued the environmental movement for ignoring social inequality and human rights.⁴⁴⁶ As explored in Chapter 3, progressive waste management strategies have explicitly tried to overcome this tension by positioning waste reduction and recycling as economic opportunities. In the context of Boston in the 1980s, the possibility of jobs and economic development the only avenue through which the Flynn administration was able to take recycling seriously as a potential component of the city’s waste system.

⁴⁴⁵ Moore, “Garbage Matters Concepts in New Geographies of Waste.”

⁴⁴⁶ Dobson, “Social Justice and Environmental Sustainability: Ne’er the Twain Shall Meet?”; Gelobter et al., *The Soul of Environmentalism: Rediscovering Transformational Politics in the 21st Century*; Shellenberger and Nordhaus, *The Death of Environmentalism: Global Warming in a Post-Environmental World*; Ted Nordhaus and Michael Shellenberger, “The Long Death of Environmentalism,” Speech (New Haven: Yale School of Forestry and Environmental Studies, February 25, 2011).

Mayor Flynn had made economic development and jobs for residents “the highest priority in his administration,”⁴⁴⁷ and the industrial development of the South Bay site was positioned in these terms. At each turn, Flynn justified his administration’s current thinking about the incinerator by framing it in terms of industrial development. For example, after Flynn made his first decision to export waste rather than opt for the incinerator in August of 1985, he was asked by reporters how he justified the more expensive proposal, given the city’s budget crunch. The *Globe* reported that Flynn answered,

“I probably arrived at the decision the other morning at breakfast with many members of the business community who were on hand. And we discussed the finances of both of these options... And it was never my contention that cost alone was going to be the overriding and the only consideration for the siting of the waste-to-energy facility... Many people concerned about the economics of Boston indicated to me it would be very difficult and might be shortsighted to just consider the cost of the per-tonnage rather than looking at the long-term negative consequences that a more proper utilization of that land (in the South Bay) may have... You’re talking about 7.5 acres of prime potentially exciting industrial property and you’re talking about a grand total of 50 permanent jobs (in the in-city plant)... We’re trying to expand our economy so people in those areas have jobs. And I thought, based on that kind of enlightened look at it, along with these other factors, such as the environmental and neighborhood impacts and so forth, that the cost factor alone would be shortsighted.”⁴⁴⁸

In this passage Flynn indicated both his concern about long-term economic development, and the fact that business interests were a key driver in decision-making. Environmental, neighborhood impacts, cost, and the garbage itself were all ancillary to job creation and economic development. Flynn was not alone in these concerns. The economic development frame was also used by State Senate President William Bulger to oppose the incinerator after the city had reversed course and decided to pursue it. As the *Globe* reported in 1987,

⁴⁴⁷ EDIC Proposal for Development of Markets for Local Recyclable Materials, July 1991; BMA / 0246.001 / Flynn-Issues-Development-Policy-Tourism/Recycling

⁴⁴⁸ Ed Quill, “Boston to Truck Trash out of the City,” *Boston Globe*, August 3, 1985, sec. Metro.

...Bulger said the governor's proposal to replace the incinerator with a recycling center was not the best use of the land and represented a political compromise. "I think of it as a kind of political balancing, although I'm not about to make big public statements about it," Bulger said. "It would seem to me it's not efficient."⁴⁴⁹

The concern for jobs development that would specifically benefit Boston was also a key concern for Flynn's Solid Waste Advisory Committee—unsurprising given that it was populated by business and neighborhood interests (the Solid Waste Advisory Committee will be addressed in more detail below). In Committee's report to the Mayor, it argued that "Construction of an in-town plant would create temporary construction jobs. Operating the facility would create 42 permanent jobs. However other development of the site could create more jobs."⁴⁵⁰ The emphasis on jobs development was also evident during the city's negotiations with American REF-Fuel while Flynn was still considering the South Bay plant. Part of the American REF-Fuel agreement was a commitment to conform to Boston resident job policy which prioritized Boston residents for public jobs.⁴⁵¹

At the moments when the Flynn administration was publicly considering recycling, he positioned it as a jobs strategy as much, if not more than a waste management approach. For example, when City Councilors weighed in to support recycling, they made explicit attempts to position recycling not as a threat to jobs in the waste industry, but as a complement.⁴⁵² And when a paper mill closed in Hyde Park, throwing 135 people out of work, Boston's public officials suddenly took a serious look at recycling. A company recycled paper manufacturer from California made an offer to buy the

⁴⁴⁹ Bruce Mohl, "Bulger Rejects Dukakis Plan to Recycle Trash in South Bay," *Boston Globe*, January 20, 1988, sec. Metro.

⁴⁵⁰ Citizen Advisory Committee on Solid Waste Disposal, "Report to Mayor Raymond L. Flynn: Issues to Consider in Making a Long-Term Decision on Solid Waste," July 29, 1985; Archive Loc: Collection 0246/Box V-9/Waste-to-Energy Incinerator 2-2

⁴⁵¹ Letter from Bruce Hendrickson to Joseph Casazza, July 31, 1985; Letter from Bruce Hendrickson to Joseph Casazza, May 2, 1986; Archive Loc: Casazza Files/Box 32/WTE/Folder - American REF-Fuel

⁴⁵² Opening Statement from Rosaria Solerno at the Special Committee on Solid Waste Hearing September 22 and 29, 1988; BMA / 0246.001 / V-9 / Environment: Dealing with Our Trash 4

mill and reopen it for recycled paper. Mayor Flynn ultimately included the possibility of reopening the paper mill as part of his justification for finally initiating a curbside recycling program in Boston.⁴⁵³ While the calculus of the Mill was a clear win for the city and the state—securing manufacturing jobs that were otherwise declining and an avenue for recycling—it took a good deal of negotiating between the city and state to make the deal happen.⁴⁵⁴ The paper mill eventually reopened; but city-state tensions and the crucible of priorities it exposed were a significant shapers of waste management politics in Boston.

Garbage, shit, and prisons: a battle of priorities

The jobs discourse characterizes a lot of local politics in many places. But in the case of waste management in Boston it acted more as a signal for how garbage was viewed, or not viewed, than a material driver of waste decisions. Obliquely, the cleanup of Boston Harbor ended up being more directly influential. Boston Harbor was a notoriously polluted body of water; by the 1950s, when Boston constructed its first primary treatment apparatus, the Harbor had been receiving a daily discharge of raw sewage for 80 years, since the city's first sewerage collection system had been completed in 1876. Even after the 1950s, the sewerage was only minimally treated, and rainstorms frequently overwhelmed the minimal facilities resulting in regular overflows of untreated sewage. The result of this history—leaving aside the decades of industrial pollution into the harbor—was one of the most polluted bodies of water in the United States. Boston managed to wheedle its way into exemptions from increasingly stringent federal water pollution standards through the 1970s.

⁴⁵³ Ray Flynn, "Statement of Raymond L. Flynn on Recycling Ordinance," July 25, 1990; Archive Loc: Collection 0246.001 / Box V-9 / Environment: Recycling 2

⁴⁵⁴ Desiree French, "Hyde Park Decision Sought on Mill Sale 200 Jobs at Stake," *The Boston Globe*, May 4, 1988, <https://www.highbeam.com/doc/1P2-8060395.html>; Jonathan Rowe, "Recycling Mill - Test Case for Dukakis," *Christian Science Monitor*, May 3, 1988, <http://www.csmonitor.com/1988/0503/amill.html>; John Ellement, "Hyde Park Paper Mill to Reopen in March," *The Boston Globe*, February 3, 1989, <https://www.highbeam.com/doc/1P2-8106650.html>; Jeffrey E. Lindenthal, "Public Benefit and Private Interest: Chronicles of the Hyde Park Paper Mill," *New England Journal of Public Policy* 7, no. 1 (March 1991): 9–37.

But a series of lawsuits initiated by the city of Quincy and the Conservation Law Foundation in the 1980s finally culminated in a court order to clean the Harbor. In an unusual ruling, Massachusetts Superior Court dictated the creation of the Massachusetts Water Resources Authority, a regional authority charged with management water and sewage systems. The primary function of the Authority, initially, was to construct a new primary and secondary treatment system that could handle the growing volume of the Boston region's sewage and nurse Boston Harbor back to health.⁴⁵⁵

As the newly minted MWRA initiated its planning, the preferred solution that emerged was to replace the inadequate sewage facility on Deer Island with a single, high capacity plant that could serve the entire region (see Figure 5.2 for a map). Other options, such as a plant in a different location, or a network of smaller plants, were deemed infeasible for political, fiscal, and geographic reasons.⁴⁵⁶ The City of Boston, under Mayor Flynn's leadership, was supportive of the efforts to clean Boston Harbor; and it was a top priority of the Dukakis administration as well.⁴⁵⁷

While the solution was optimal for many reasons, it posed one key challenge. Since the mid-19th century, Deer Island was Boston's preferred location for undesirable, but essential public functions; it had held institutions for rehabilitating the poor and a quarantine station for new immigrants among other unsavory uses. At the time of the 1980s garbage crisis, Deer Island was home to the Suffolk County House of Correction. It was a century-old facility that had never been designed for long-term residents, but over time, it had become an overcrowded prison in which people were

⁴⁵⁵ Thomas Andrew Savage, "Boston Harbor: The Anatomy of a Court-Run Cleanup," *Boston College Environmental Affairs Law Review* 22, no. 2 (December 1, 1995).

⁴⁵⁶ Matthew Wald, "Island Chosen for Boston Area Sewer Plant," *New York Times*, July 11, 1985; Joan Vennoch and Michael K. Frisby, "Flynn Agrees to Site for Jail; State Offers Aid for South Bay," *Boston Globe*, May 14, 1986, sec. Metro; Savage, "Boston Harbor: The Anatomy of a Court-Run Cleanup."

⁴⁵⁷ Raine, Personal Interview; Sullivan, Personal Interview.

subjected to dreadful conditions for the duration of sometimes lengthy sentences. Though it was a county facility, it was managed by the city of Boston, and improving it was another key priority of the progressive Flynn administration.⁴⁵⁸



Figure 5.2. A=The South Bay site; B=Deer Island. Base map Source: Google Earth.

To make things more complicated, although Deer Island is technically within the City of Boston, land access to it is only available through neighboring Winthrop. Winthrop, which also suffers some of the greatest impacts from Logan Airport, was being asked to host access to a massive new sewage facility as well as a new prison. As part of a bargain with Winthrop's city council, Massachusetts, the MWRA, and the City of Boston agreed to relocate the House of Correction. It turned out in any case that the expanded sewage plant would not leave enough space for any other uses on the Island.⁴⁵⁹ The House of Correction had to be relocated.

⁴⁵⁸ Frank Keefe, Personal Interview, August 30, 2014; Sullivan, Personal Interview; Vennochi and Frisby, "Flynn Agrees to Site for Jail; State Offers Aid for South Bay."

⁴⁵⁹ Sullivan, Personal Interview.

A new site for the House of Correction was quickly identified: South Bay. From the point of view of politicians, the same characteristics that made the site a perfect home for an incinerator also made it an ideal site for the prison. It had no residential neighbors, it was owned by the City limiting the need for costly and difficult land transfers, and it was centrally located and accessible to transportation infrastructure. The Flynn administration was eager to improve the inhumane conditions at the facility and liked that the location would give families of the incarcerated, as well as lawyers and other service providers, easier access to the people housed there. The move fit within their larger vision for the city and their progressive agenda. Given the urgency of the Harbor cleanup, state leadership eagerly supported the relocation plan. The Dukakis administration offered the city \$40 million dollars to help defray the costs of the relocation. Even Senate President Bulger, a powerful politician whose district included the South Bay site and its surroundings, supported the move. Initially, the Boston officials believed that both the prison facility and the incinerator would fit on the site. But as plans for the incinerator become more concrete, officials began to believe that shoehorning both facilities into the area would be impossible.⁴⁶⁰

In retrospect, the city and state actors interviewed for this project remembered the House of Correction relocation as the key reason that the resource recovery project was ultimately abandoned. Siting the two facilities on the single site may in fact have been impossible. But though the connection between the prison and the incinerator was certainly a driving factor for decision-makers, a host of other issues were also jockeying with the incinerator.

⁴⁶⁰ There is of course also the ethical consideration of locating a prison adjacent to a toxic facility, but I didn't encounter any evidence that this was a concern at the time.

Garbage as power: city-state tensions and the Bulger-Flynn feud

In addition to subservience to other infrastructural priorities, garbage was a pawn in power struggles among city and state politicians. In particular, Boston's garbage became a public arena for a long-standing feud between Mayor Ray Flynn and Massachusetts Senate President William Bulger. Given that Bulger was from South Boston, his opposition to the South Bay facility might have been expected; it is not uncommon for politicians to oppose the siting of waste infrastructure in their districts.⁴⁶¹ But city-state political relations, particularly as they played out between Flynn and Bulger were not just about infrastructure siting; instead, garbage became a medium through which political power was tested and expressed.

During the first few years of Flynn's administration, Bulger had remained relatively quiet on the disposal crisis and on the incinerator. But on July 16, 1987 State Senate President William Bulger, a fellow South Boston native and long time political rival of Mayor Ray Flynn, publicly came out against the incinerator, stunning Mayor Flynn and his administration. Senate President Bulger filed a surprise bill in the legislature that would prevent Boston from siting the incinerator at the South Bay site.⁴⁶² The following day, Flynn took the unusual move of calling a press conference on the State House steps to protest Bulger's bill. Bulger showed up to the conference. The two politicians, both who were both known for sedate public performances, went toe-to-toe in full view of the Boston press corps. Flynn defended his decision and charged Bulger with dirty politics. But Bulger

⁴⁶¹ Davies, "Incineration Politics and the Geographies of Waste Governance: A Burning Issue for Ireland?"

⁴⁶² Bruce Mohl, "Bulger Stuns Hub Officials by Opposing Incinerator," *Boston Globe*, July 16, 1987, sec. Metro.

ultimately stole the show. He announced that he had a “near perfect” site in mind for the incinerator—outside the city—but would not disclose where.⁴⁶³

Bulger compounded the political nature of his objection to the South Bay proposal by offering wildly unrealistic alternatives. After months of mystery, he finally announced his ideas, which included technologies, such as an incineration-at-sea, that were already widely discredited. His primary alternative, however, such instead suggested sending Boston’s waste to a recently closed quarry in Weston, a wealthy suburb.⁴⁶⁴ Aside from the fact that Boston officials had no jurisdiction over the Weston site, the proposal was politically preposterous. Within months of Bulger’s announcement, the Weston had rezoned the site out of industrial use.⁴⁶⁵

To block the incinerator, Bulger used all the tools at his disposal, which were considerable. In addition to hijacking headlines, Bulger used his control over the state senate to hamstring, and eventually eliminate a \$40 million grant promised by the Dukakis administration to offset the costs of building new infrastructure and for industrial development in the city.⁴⁶⁶ While all of this was playing out, neither Bulger nor Flynn were working towards a feasible, politically acceptable solution for the city’s waste. Although the historical records are not exhaustive, it seems that Bulger

⁴⁶³ M. E. Malone, “A Storm on the State House Steps,” *Boston Globe*, July 18, 1987, sec. Metro.

⁴⁶⁴ Bruce Mohl, “Bulger Proposes Weston Trash Site; Plan Is Alternative to Hub Incinerator,” *Boston Globe*, September 17, 1987, sec. Metro; Richard Saltus, “EPA, Others Wary of Incinerator-at-Sea Plan,” *Boston Globe*, September 19, 1987, sec. Metro.

⁴⁶⁵ Larry Tye, “No Easy Task to Find Site for Trash Facility,” *Boston Globe*, July 22, 1987, sec. Metro; Mohl, “Bulger Proposes Weston Trash Site; Plan Is Alternative to Hub Incinerator”; Bruce Mohl and M. E. Malone, “Bulger Looks Outside Boston for Trash-Disposal Aid,” *Boston Globe*, July 24, 1987, sec. Metro; Peter Sleeper, “Bulger Wants Advisory Panel to Seek New Incinerator Sites,” *Boston Globe*, July 31, 1987, sec. Metro; Frank Phillips, “Rezoning in Weston Kills Trash Proposal,” *Boston Globe*, May 11, 1988, sec. Metro.

⁴⁶⁶ Bruce Mohl, “Flynn Says Bulger Is Stalling Bills to Aid City,” *Boston Globe*, July 21, 1987, sec. Metro; Bruce Mohl, “Bulger Amendment: Confusion, No Debate,” *Boston Globe*, July 23, 1987, sec. Metro.

and Flynn met face to face on the issue of waste management only once—and it was during the “storm on the statehouse steps.”⁴⁶⁷

Bulger’s opposition, however grounded in legitimate concerns about impacts on South Boston, was understood by the Flynn administration and the media to be more about political rivalry than substantive objections to resource recovery in Boston.⁴⁶⁸ Both politicians from South Boston, Flynn and Bulger were well known for competing political ambitions and life-long antipathy. As one staffer from the Flynn administration put it:

Flynn and Billy Bulger had been knocking heads going back to the early ‘70s-- because Ray Flynn did not play by the South Boston political rules and Billy Bulger was in charge of the South Boston political rules. So now that they both had significant power, at various times they did their best to thwart each other. I’m one side of that. I’m trying to say it so that it’s down the middle, but there it is.⁴⁶⁹

The lack of substantive engagement between the two politicians suggests that neither was entirely focused on the task of solving the waste crisis. The Flynn-Bulger feud was tailor-made for local news, and each exploited the media-ready stand-off towards their own ends. Bulger garnered headlines for savvy tactics and wild proposals, all in the name of protecting his district. Flynn, for his part was able to lay blame for Boston’s challenges on inconsistencies and lack of support from the state government.⁴⁷⁰ But antics aside, the centrality of the political story further demonstrates that way that garbage became a medium of politics between the city and state.⁴⁷¹

⁴⁶⁷ Malone, “A Storm on the State House Steps.”

⁴⁶⁸ {Citation}

⁴⁶⁹ Sullivan, Personal Interview.

⁴⁷⁰ Daniel Golden, “A ‘Turf War’ Widens; South Boston Neighbors Flynn and Bulger Are Really Miles Apart,” *Boston Globe*, July 26, 1987, sec. Metro; Peter Howe, “Bulger Gets Mixed Reviews, Some Residents Criticize Incinerator Move,” *Boston Globe*, July 19, 1987, sec. Metro; Editorial, “Undermining an Incinerator,” *Boston Globe*, July 17, 1987, sec. Editorial Page; Editorial, “Incinerator Insight,” *Boston Globe*, September 8, 1987, sec. Editorial Page.

⁴⁷¹ While this was all playing out, Massachusetts was in the process of creating the MWRA and planning, and then building the new sewage treatment facility; so it is not the case that politics debilitated all infrastructure planning. The creation of the MWRA and the construction of the Deer Island plant were highly controversial, technical and politically difficult moves. But both city and state were focused on them; the stakes were high, and many actors coalesced to make it a priority. This never happened for the incinerator.

While the Bulger-Flynn feud played out in personal terms, Flynn also used the issues of the incinerator as a way to highlight what he argued was the larger failure of the state government to provide solid waste solutions to the city. Mayor Flynn wanted the state to provide a stronger framework and more resources. After it became clear that the incinerator would not go forward, in large part because of state opposition, Flynn made a point of arguing that state should be playing a more proactive role in developing disposal capacity and planning for waste management at the state level. As the city considered a state proposal for a recycling facility to accompany the Suffolk County House of Correction at South Bay, Flynn told the *Boston Globe*,

We think if this proposal goes forward, is passed by the City Council and implemented, we'll have one of the best recycling programs of any city in the country... This is no panacea for the trash problems we're going to face in the future. Hopefully, the state will come up with a comprehensive solid waste program.⁴⁷²

As the details of a potential recycling program in Boston were hammered out, Flynn reiterated to reporters, "his position that the primary trash issue in Boston is not the particulars of how to handle the city's waste that can be recycled... but forcing the state to come up with a solution for the waste that cannot be recycled."⁴⁷³

This emphasis on the role of the state is interesting because historically, state governments generally, and Massachusetts specifically, had not been particularly involved in municipal waste management. But in this case, the state took an active interest because of the ancillary infrastructure issues, and the desire of the Dukakis administration to be an environmental leader on the issue. It also provided a way for the Flynn administration to subtly relocate blame for the escalated waste

⁴⁷² Peggy Hernandez, "Recycling Plan Proposed by Flynn to Dispose of City's Trash," *Boston Globe*, July 27, 1988, sec. Metro.

⁴⁷³ Peter Howe, "Flynn, Scodras Disagree over Need for Fees, Fines in Recycling Plan," *Boston Globe*, December 12, 1988, sec. Metro.

management costs away from the city. Most significantly, though, Flynn's regular comments to the press about the lack of planning at the state level indicate that he saw the state, and not the city, as the agent that should be responsible for comprehensive solid waste planning. This expectation is made more clear by the fact that the city, as will be discussed in the following section, did not even manage a public, coordinated planning process around garbage.

Both the negotiations around the Deer Island sewer treatment facility and the soap opera of Mayor Flynn and Senator Bulger's rivalry expose the ways that garbage became a medium for state power struggles in stark terms. Garbage was a key arena through which Flynn and Bulger dueled. The biopolitics of garbage were on particularly grand display in the chess board play of the prison, the sewage plant, and the incinerator. Not only did the decision hold eastern Massachusetts's sewage in the balance, but also the lives of those incarcerated in the Suffolk County House of Corrections. The infrastructure plans being debated by politicians would determine who breathed in what pollutants, how Boston residents would enact their daily relations with their discards, whether the inmates at the Suffolk County House of Corrections continued to live in conditions squalid even by 19th century standards, and whether all the non-human living inhabitants of Boston Harbor would continue to live in a sewage bath. In other words, these decisions were consequential. But as the negotiations played themselves out, garbage remained less well defined than shit or prisoners. The material itself was never interrogated; some efforts were made to model potential air emissions from a South Bay incinerator, but these models were abstract calculations that did not take on the material qualities of the trash itself. The key identity of garbage was as a negotiation point. The disposal problem frame, which emphasized removal and treatment, allowed the material substance of garbage to remain publicly unexamined.

Maintaining the Disposal Problem: Planning with Limited Expertise

Garbage served many political ends in Boston during this time period, but there were also many committed public servants who were working in good faith to solve the problem as they understood it. Throughout the decade, though, planning for solid waste in Boston during was fragmented and uncoordinated. Planning and analysis for waste management was undertaken by a variety of government departments and organizations, often with conflicting priorities and missions, and there was no coordinated process through which ideas, concerns, and interests could be channeled and debated publicly. Key decision-makers remained faithful to the disposal frames, dismissing either for practical or political reasons, alternative frames that emerged from during the time period. Those most central to decision-making processes were representative of certain interests and viewpoints, but systematically excluded others. The result was that the dominant problem-framing remained intact all through the incinerator negotiations, and continued to shape programming even after the incinerator possibility was finally off the table.

Conflicting Public Sector Plans

During the 1985 elections, several city councilors had campaigned on the incinerator issue, and been elected.⁴⁷⁴ These councilors, in particular Rosaria Salerno and David Scondras pushed the City Council to propose an alternative vision for Boston's waste system. They brought in recycling and environmental advocates for public hearings and committee meetings about Boston's options. As part of their efforts, they brought in speakers to educate the Council on movements to move beyond disposal. Barry Commoner, a famous incinerator opponent and recycling advocate, presented at a special committee on Solid Waste for the City Council meeting in December of

⁴⁷⁴ Peggy Hernandez, "Council Hopefuls Air Trash Proposals; Candidates Agree Waste Much Be Recycled," *Boston Globe*, October 8, 1987, sec. Metro; Editorial, "Incinerator Insight."

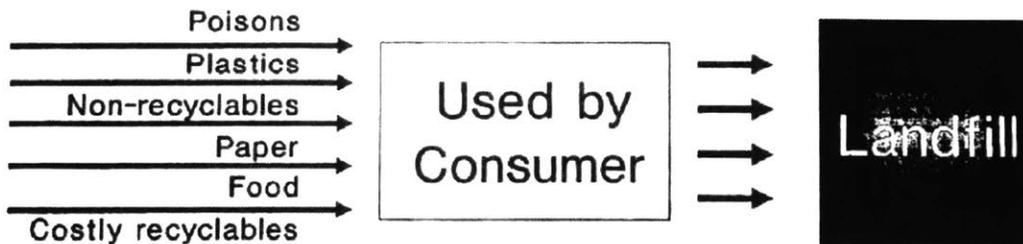
1988. He presented Boston's City Council with information on recycling, arguing that the city should be ambitious; based on his assessment of waste in other places, he argued that 90% of the waste stream is recyclable in some fashion. Commoner identified the conflicts between recycling and incineration and argued that recycling could be set up more quickly and cheaply than an incinerator, with good results. He also argued that rational planning, evaluation of the options, and selection of the most sensible approach was key. At the same hearing, Stephanie Pollack from the Conservation Law Foundation also testified before the City Council; she also advocated for recycling rather than incineration as the alternative to landfills.⁴⁷⁵

A week after Commoner and Pollack's presentations, on December 8, 1988, the City Council's Special Committee on Solid Waste unveiled their own trash plan called "Dealing with our Trash." The report, authored by Scondras and Salerno with the help of Harvard's Kennedy School of Government, included an assessment of Boston's current waste management predicament and its options. Salerno and Scondras proposed an Integrated Waste Management Program (see Figure 5.2) for Boston that included legislation to reduce the use of toxic chemicals in consumer products, mandatory recycling and composting, a pay-as-you-throw rate structure to encourage behavior change and properly fund a waste management authority, a commission of stakeholders to oversee rates and programs, and energy recovery as a last resort for unrecyclable material. As part of the plan, the city council drafted an ordinance that emphasized recycling, composting, waste reduction, with disposal as a last resort for non-reusable, non-recyclable materials. The Council proposed to establish a solid waste commission, to be headed by the public works commissioner, with representatives from neighborhood groups, industry, environmental groups, that would to oversee

⁴⁷⁵ Excerpt from Meeting of Special Committee on Waste Management, December 7, 1988 (2); Archive Loc: Collection 0246.001 / Box V-9 / Folder Environment: Dealing with Our Trash 4.

an extensive and professional waste planning process and monitor progress towards solid waste goals. The commission would also level fees in what was essentially a pay-as-you-throw (PAYT) scheme that would ensure a revenue stream to pay for recycling programs.⁴⁷⁶

CITY OF BOSTON CURRENT WASTE DISPOSAL SYSTEM



This shows the present way consumer products are brought into the home and disposed of. The situation for commercial waste production is essentially the same.

INTEGRATED WASTE DISPOSAL SYSTEM

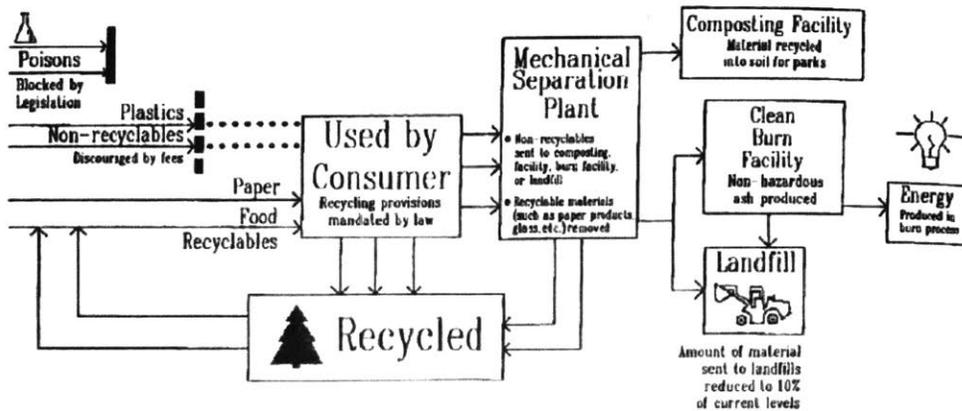


Figure 5.3. Diagrams from the City Council plan, “Dealing with our Trash;” the top depicts Boston’s current waste system, and the bottom shows a potential ISWM system.

⁴⁷⁶ Boston City Council, Ordinance Establishing a Solid Waste Management System for the City of Boston, Summary; Archive Loc: Collection 0246.001 / Box V-9 / Folder Environment: Dealing with Our Trash 4; Special Committee on Solid Waste Management, “Dealing with Our Trash: A Report to the Boston City Council” (Boston: Boston City Council, October 3, 1988).

The report's authors acknowledged contributions from many local stakeholders, including the Mayor, Neil Sullivan, and Public Works Commissioner Joe Casazza. But when the report went public, both Casazza and Flynn's aides dismissed the work. The *Globe* reported that Casazza and Flynn's environmental lead, Robert Bauman, hadn't been consulted in the development of the plan. Bauman told the press that the plan had "serious flaws" and presented an "enforcement nightmare." Casazza refused to comment, telling reporters that he hadn't even had time to read it.⁴⁷⁷ Though the plan may have been politically important for Councilors Scondras and Salerno, it went nowhere in terms of policy. Flynn also critiqued the plan publicly, arguing against charging needlessly complex fees for waste service.⁴⁷⁸ "Dealing with our Trash" got a bit of press after its release, but otherwise went nowhere. The City Council approved the Mayor's budgets, but otherwise had no direct role in solid waste policy making. The key decision-makers dismissed the plan, and quickly moved on.

During the same stretch of years, other government agencies were also planning for solid waste. The Metropolitan Area Planning Council (MAPC) released a regional plan for the Boston area's waste in 1986. This document contained contextual information about solid waste in the region, including a detailed town-by-town assessment of waste generation, collection, recycling, and disposal. The MAPC concluded that the cost of landfilling would likely continue to increase and thus towns that were able to do so would be wise to invest in energy recovery.⁴⁷⁹ Unlike the BMRB whose interests were represented on the Mayor's Citizens Advisory Committee for solid waste planning, the MAPC had no formal representation in the city processes and the report was not

⁴⁷⁷ Peter Howe, "Recycling Stressed in Councilors' Trash Plan," *Boston Globe*, December 9, 1988, sec. Metro.

⁴⁷⁸ Howe, "Flynn, Scondras Disagree over Need for Fees, Fines in Recycling Plan."

⁴⁷⁹ MAPC, "Coping with the Solid Waste Crisis: A Practical Guide for Local Officials and Citizens" (Boston, MA, January 1986).

referenced in city documents or widely covered in the press.

At the state level, the DEQE had a solid waste division that was actively working towards a progressive state agenda for recycling infrastructure and to establish an official position on incineration, and other state offices were also weighing in. In the early 1980s, prior to the peak of interest in waste planning at the city level, the state's Science Resource Office released a report called "Solid Waste Management in Massachusetts;" Governor Dukakis released a waste management plan for Massachusetts in 1985. These planning processes were not coordinated with the city of Boston. The work happening at the city level did not formally incorporate the prior work at the state level, and also had little if any formal review of the analysis and ideas being provided by City Council or the MAPC.

Limited expertise involved in planning process

The Flynn administration did actually establish a formal planning process for solid waste. The administration prided itself on transparent decision-making; the press had access to Flynn's staff, the Mayor himself, and many waste-related meetings and events throughout the decade. But, though transparent enough, the administration-coordinated process for garbage planning limited.

The major element of Flynn's planning process was the appointment of a Solid Waste Advisory Board. The Board was appointed shortly after Flynn's inauguration, and remained active through the administration's first decision to move forward with the South Bay WTE facility. The Advisory Board included eleven full members and two ex-officio members, including Jamie Miller from the Massachusetts Bureau of Solid Waste Disposal and Robert Travaglini, a Boston City Councilor who was then Chair of the Committee on Urban Resources. The full membership contained

representatives from Boston's neighborhoods including the South End, Dorchester, Roxbury, Fenway, and South Boston. The Board also had three members representing Boston's business community: Samuel Tyler, president of the Boston Municipal Research Bureau (BMRB), Nicholas Georgenes, president of the New Market Business Association, and Richard Mori, Director of Metropolitan Affairs for the Greater Boston Chamber of Commerce. Betsy Johnson, a representative of the South End and the American Lung Association was the only member who had an explicit connection to a public health organization. None of the members had recognized affiliations to any environmental organizations.⁴⁸⁰

The Board was given an extremely narrow mandate. It was instructed to provide input on the issues that the administration should consider in selecting among three options: the Signal proposal to haul waste out of Boston; the American REF-Fuel WTE proposal; and a third proposal to haul all of Boston's waste to a private landfill in Plainville, MA. The advisory committee had no formal role in the administration's decision, and no purview to recommend alternatives.⁴⁸¹

The Board's charge asked only for an assessment of issues, it thus did not offer recommendations to the Mayor. Rather they evaluated each of the three proposals according to the criteria listed above and then identified a host of issues that they urged the administration to consider further. The issues that received the most attention, reflecting the interests of the Board members, were traffic, public health, and proposal cost. Though compatibility with recycling was a criterion, none of the Board's assessments developed the issue of recycling in relation to the proposals. In terms

⁴⁸⁰ Citizen Advisory Committee on Solid Waste Disposal, "Issues to Consider in Making a Decision on Long-Term Solid Waste Disposal," July 29, 1985; Archive Loc: Collection 0246/Box V-9/Waste-to-Energy Incinerator 2-2

⁴⁸¹ Citizen Advisory Committee on Solid Waste Disposal, "Issues to Consider in Making a Decision on Long-Term Solid Waste Disposal," July 29, 1985; Archive Loc: Collection 0246/Box V-9/Waste-to-Energy Incinerator 2-2

of environmental concerns, the Board noted explicitly that they lacked sufficient data to make substantive comparisons, but recognized that any environmental impacts of incineration would apply both to a facility constructed in the city of Boston and facilities contracted by the city but located elsewhere.

The committee felt hamstrung by its limited mandate. The introduction of the report expresses a degree of concern about the limited public participation in the evaluation of the options and some frustration that they weren't able to explore other alternatives—even minor ones such as a smaller Boston-based facility.^{482, 483} After State Senator Bulger came out against the incinerator, Betsy Johnson expressed frustration that the Mayor had only permitted the Board to review the South Bay site. “ ‘If this is what it took for the city to finally sit up and take notice of what we've been saying for three years,’” she told the *Boston Globe*, “ ‘I say more power to President Bulger.’”⁴⁸⁴

While the Board's mandate was narrow and certain interests, like those of recycling advocates or environmental groups were underrepresented, there were some key sets of interest and expertise that were very well represented in the decision-making process. The Advisory Board included Samuel Tyler, the BMRB president. In addition to having an institutional voice on the Board, the BMRB was worked outside of institutional channels to shape opinion and influence decisions. The BMRB published several high profile analyses of Boston's waste problem during the 1980s. As a think tank primarily devoted to serving Boston's business community, the BMRB's work focused on costs, efficiencies, and the impacts of the city's decisions on the commercial sector. In 1982,

⁴⁸² Citizen Advisory Committee on Solid Waste Disposal, “Issues to Consider in Making a Decision on Long-Term Solid Waste Disposal,” July 29, 1985; BMA/Collection 0246/Box V-9/Waste-to-Energy Incinerator 2-2

⁴⁸³ M. E. Malone, “Advisory Panel on Disposal Meets Tonight,” *Boston Globe*, August 11, 1987, sec. Metro; M. E. Malone, “Flynn Refuses to Ask Group to Look at Other Waste Sites,” *Boston Globe*, August 12, 1987, sec. Metro.

⁴⁸⁴ Mohl and Malone, “Bulger Looks Outside Boston for Trash-Disposal Aid.”

before Mayor White had released the RFP for a South Bay WTE incinerator, the BMRB published a brief report arguing that investing in energy recovery would allow Boston to avoid becoming “a captive of the market,”⁴⁸⁵ a message that ended up being a key part of White’s justification for the

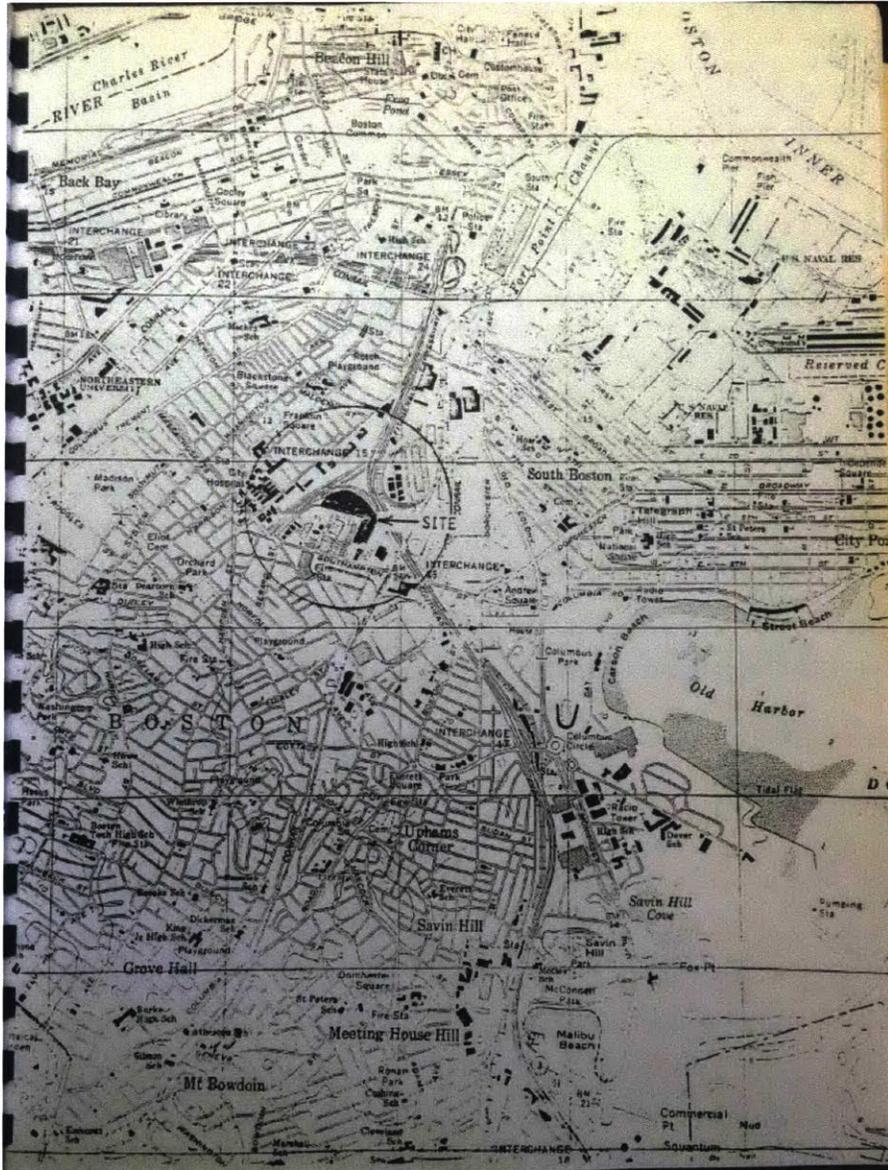


Figure 5.4. A South Bay site map from the 1983 EIR. This was the only site evaluated in the EIR, and the only proposal that Mayor Flynn’s Solid Waste Advisory Board was allowed to comment on.

⁴⁸⁵ Boston Municipal Research Bureau, Inc., “Getting Boston’s Solid Waste out of the Dumps,” November 17, 1982, Boston Public Library.

South Bay proposal. Another BMRB report, published in 1986 just after Mayor Flynn's first decision to export the city's waste via a 20-year contract with Signal Environmental Systems, argued that in-city disposal with a waste-to-energy plant would cost the public sector over \$90 million less, than the export plan, and would save the private sector \$120 million in trash hauling and disposal contracts.⁴⁸⁶

The BMRB was generally supportive of the privatization of waste collection and treatment, but argued that the city should move to consolidate public contracts and provide increased waste disposal capacity to relieve the increasingly tight capacity in the region. By virtue of the cost differential, particularly for the commercial sector, as well as the opportunity for the city to exercise more control over disposal and contribute to resolution of the disposal crisis, the BMRB strongly advocated for the American REF-fuel proposal. Short of that, they recommended that the city facilitate the consolidation of all municipal waste collection so that the commercial sector would not remain subject to the "open market," which could result in substantial cost increases over the coming decades.⁴⁸⁷ The BMRB report made a splash in the press; the *Globe* ran articles insinuating that the city had made the wrong decision.⁴⁸⁸

In addition to the well-represented interests of Boston's business community, another key voice was that of Joseph Casazza, the Commissioner of the Public Works Department. Casazza was the only department head from the Mayor White's administration that Mayor Flynn kept on. Casazza had already been on the job for nearly two decades, and Flynn's staff prized his knowhow:

⁴⁸⁶ Boston Municipal Research Bureau, Inc., "Financial Comparison of Boston's Solid Waste Disposal Options," February 1986, On file with the BMRB.

⁴⁸⁷ *Ibid.*, 36–38.

⁴⁸⁸ Quill, "Officials Say Plan to Take Solid Waste out of City Costs More"; Ed Quill, "Trash Bills for Boston May Double," *Boston Globe*, April 8, 1986, sec. Metro; Ed Quill, "Taking Trash to Suburbs Seen as Costing City \$215," *Boston Globe*, February 20, 1986, sec. Metro; Quill, "Boston to Truck Trash out of the City."

We didn't know how to pick up snow. And we knew from Chicago that if you don't pick up the snow you are quickly out of a job. So we kept the Public Works Commissioner, but one of our policy staffers was sent into the department as his special advisor to harangue him on recycling.⁴⁸⁹

Casazza was a public works veteran, and he worked in the tradition of the Sanitary City. His priority was clean streets, first and foremost. In service of this goal, he was a stolid proponent of WTE in Boston. He worked with Mayor White on the initial incinerator proposal, and believed that an in-city plant would provide Boston with more certainty and more capacity, and would make it easier and more affordable to provide efficient waste management service. In a profile in the *Boston Globe* during the transition between Mayor White and Mayor Flynn's administrations, significantly titled "In Pursuit of Cleanliness" Casazza expressed shame at the infamously dirty condition of city streets. Waste collection and clean streets were part of the same problem, and he positioned the WTE facility as an affordable waste management solution that would free resources for basic city hygiene.⁴⁹⁰

Casazza worked in pursuit of clean streets in a number of ways. In addition to publicly advocating for the WTE facility specifically and clean streets and tidy trash collection generally, he was closely involved with Keep America Beautiful, even joining the organization's Board of Directors in 1981.⁴⁹¹ He and his staff were involved in dozens of small programs to reduce litter, curb illegal dumping, and to encourage residents to properly (tidily) put out their garbage cans for collection. The issue of cleanliness was an interest of Casazza's independently, but an emphasis on clean streets was also reinforced by residents who frequently wrote to complain about issues related to street cleanliness, and by administration officials responding to constituent concerns. Clean streets

⁴⁸⁹ Sullivan, Personal Interview.

⁴⁹⁰ Ian Menzies, "In Pursuit of Cleanliness," *Boston Globe*, November 3, 1983, sec. Metro.

⁴⁹¹ Letter from Keep American Beautiful President Roger Powers to Joseph Casazza, December 2, 1981; Archive Loc: Casazza Files/Box 27/Keep America Beautiful

were a wide-spread public priority, and Casazza diligently advocated for them.⁴⁹²

However necessary an emphasis on clean streets may have been in Boston during the 1970s and 80s (one newspaper offhandedly remarked that Boston, along with New York had earned the dubious honor of being the nation's dirtiest city⁴⁹³), Casazza's focus on cleanliness and professional orientation towards waste-to-energy came at the expense of serious consideration of other options. One material way in which this exclusion played out was the environmental impact report (EIR) for the waste to energy facility. Where Seattle's EIS served as a vehicle for a robust, publicly informed, and wide-ranging evaluation of options, Boston's EIR was a narrow technical exercise.

Commissioner Casazza commissioned the EIR in the last year of Mayor White's administration, before American REF-Fuel had been formally contracted. The Report, which was drafted by CSI Resource Systems, Inc., a nation-wide incineration consultant, only fully evaluated one option: a WTE incinerator at South Bay. The final section of the report briefly considered four alternatives: hauling Boston's waste to landfills outside of the city; hauling Boston's waste to incinerators outside of the city; building a landfill in Boston; and building a WTE facility elsewhere in Boston. Each of these options received minimal attention in the report—just enough to demonstrate why they

⁴⁹² Memorandum from Frederick Betzner to Joe Casazza, Re: Modification of Trash Ordinance, July 30, 1979; Archive Loc: Casazza Files/Box 23 - 1980/Rubbish; Memorandum from Deputy Mayor Katherine Kane to Joseph Casazza, Re: Enclosed Article, July 28, 1980; Memorandum from Joseph Sances to Joe Casazza, Re: Cleveland Circle Area Litter Baskets, November 14, 1980; Letter from Joe Casazza to Roberta Kelman, Executive Director of the Beacon Hill Civic Association, August 21, 1980; Letter from Joe Casazza to Muriel Davis, August 21, 1980; Letter from Joe Casazza to Paul D'Addario, July 3, 1980; Memorandum from Joseph Sances to Brian White, Re: Litter Baskets, July 3, 1980; Archive Loc: Casazza Files/Box 23 - 1980/Sanitary Division. Memorandum from Cornelius Doherty to Joe Casazza, Re: Survey of Litter Baskets, August 21, 1981; Archive Loc: Casazza Files/Box 27 - 1982/Litter Baskets. Memorandum from Arnold Spector to Joe Casazza, Re: A Litter Enforcement Program, May 19, 1982, with attachments; Memorandum from Eugenie Beal to Joe Casazza, Re: Update on Litter Enforcement Program, June 14, 1982; Archive Loc: Casazza Files/Box 27/Environment Department; Memo from Eugenie Beal to Alex Taft, Re: Cleanup Recommendations, July 29, 1982; City of Boston Environment Department, Litter Enforcement Project Summary, undated; Archive Loc: Casazza Files/Box 27/Environment Department.

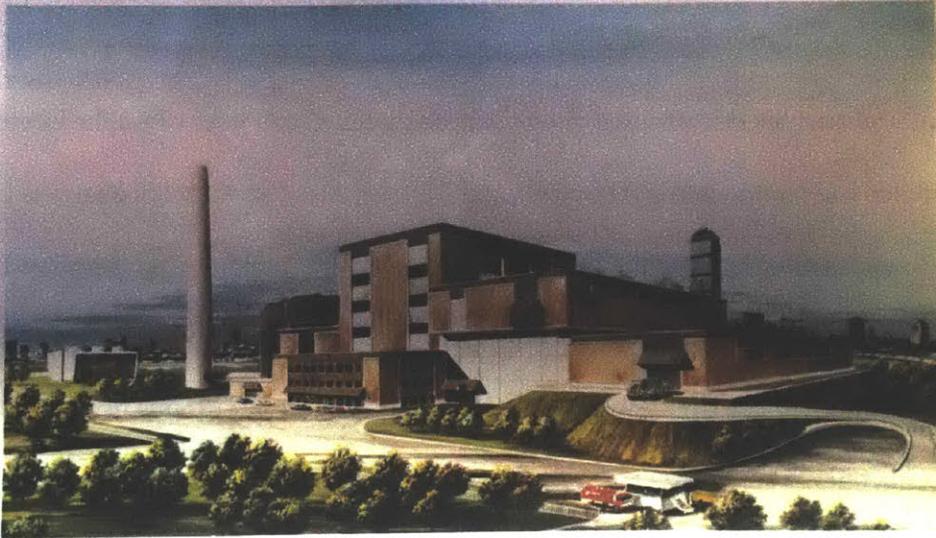
⁴⁹³ Menzies, "In Pursuit of Cleanliness."

would be less desirable than the South Bay plant. The EIR contained no documentation of public comment, and contained no discussion of recycling, reuse, or waste reduction.

The EIR presents the South Bay facility as a “long-term economically and environmentally sound solution to its solid waste disposal problem.”⁴⁹⁴ The EIR included, alongside detailed projections about air quality and traffic impacts, an artist’s rendering of the proposed facility. The rendering was purely schematic; the facility had not yet been designed. Thus, its presentation in the report can be understood as a conceptual signal about what the facility would represent, more than what it would actually look like. In the rendering, the plant is presented as an innocuous, even boring, office building, on a fully landscaped site. There is a single, white smokestack, projecting up into a pink sunset, off to the side of the facility. It looks more like the Bunker Hill Monument than an incinerator stack. Behind the facility, just visible, is the top of the recently constructed Prudential Building, an important signal of progress and development in Boston. The angle of the representation makes the facility look like a guardian of the modern, growing city behind it. Especially when compared to a photo of the pre-existing incinerator, the WTE facility looks like a clean, modern, thoroughly unobjectionable contribution to the city (see Figure 5.4).

⁴⁹⁴ CSI Resource Systems, Inc., “Draft Environmental Impact Report: City of Boston Waste-to-Energy Project” (City of Boston, Department of Public Works, December 15, 1983), 1, Boston Public Library.

FIGURE 3.1
ARTIST'S RENDITION OF THE FACILITY



Figures 5.5. Top: Artist's rendering of the proposed South Bay facility included in the 1983 EIR; no other option received serious evaluation in the document.

Figure 5.6. Bottom: 1970 view of the South Bay Incinerator, with a mountain of garbage, from the Spencer Grant Collection, Boston Public Library.

The influence of key voices, including Casazza and the BMRB is as clear in the in the dominance of the disposal problem frame, and in the ultimate decisions of the administration, as is the absence of other views. But this should not be taken to mean that there was no citizen interest. The proliferation of plans and analysis documented above demonstrates a high level of public interest in solid waste management and planning in government and beyond. The City Council plan was broadly responsive to issues raised during the campaign, and at various points public hearings held by the Mayor's office and City Council were flooded with South Boston residents and neighborhood leaders who opposed the incinerator.⁴⁹⁵ In addition, advocacy groups like Fair Share Massachusetts and Greenpeace sustained campaigns to push the Flynn administration to abandon incineration and develop an aggressive recycling program. Neil Sullivan, Flynn's lead on solid waste, had actually been a staffer at Mass Fair Share prior to joining the administration, and the press regularly reported on meetings between the administration and advocacy groups. Perhaps the most telling signal of public interest is that local newspapers covered the ins and outs of garbage in Boston on a near-daily basis throughout the 1980s.

Within the formal planning documents, though, there is little evidence of citizen voices. In Mayor Flynn's publicly stated rationales for his decisions, he references generalized "neighborhood impacts," and certainly the concern for jobs was well represented. But there is no indication that there was a real critical reckoning with alternative views ideas. Ultimately, the administration's decisions, while made with the best intentions, were driven by a limited set of voices and knowledge.

⁴⁹⁵ Ed Quill, "Trash Plan Meeting Opposition," *Boston Globe*, May 4, 1986, sec. Metro; Ed Quill, "Flynn's Switch on Trash Plant Site Fuels Debate over Decision Making," *Boston Globe*, May 11, 1986, sec. Metro; Carol Pearson, "Flynn Vows to Develop Area Slated for Jail, Trash Plant," *Boston Globe*, May 16, 1986, sec. Metro; Alexander Reid, "South Bay Trash Incinerator Nearing Gantlet of Hearings," *Boston Globe*, June 28, 1987, sec. Metro; Tye, "Coalition Advocates Recycling as Alternative to Incinerators"; Michael K. Frisby, "Candidate Forum Seeks Answers on Tenants, Trash," *Boston Globe*, August 14, 1987, sec. Metro.

The immateriality of garbage and the stability of the disposal problem

Throughout the decade, garbage was talked about in remarkably limited terms. In the press, it was simply trash, waste, or garbage. Concerns about incinerator ash provide a peek into the ways that waste and its outputs were dematerialized in the planning process. Flynn's advisors noted that ash resulting from incineration "must be disposed of in an environmentally sound manner,"⁴⁹⁶ but provided little indication of what this might mean. A memorandum assessing a potential ash disposal site in Quincy determined that the site was "imperfect" but feasible:

The reconnaissance revealed that about one-half of the parcel would be either unsuitable or extremely expensive to develop as an ash landfill due to high bedrock, wetlands, and previously buried solid waste. Approximately 12 acres of the site would be relatively suitable for development as an ash landfill, while another 10-12 acres of the site would be marginally suitable for landfill development.⁴⁹⁷

This is the technocratic language of engineers; it negates the materiality of the substance in question. It ignores the political and social identities of the ash, and the waste material it came from. It frames the project of waste management as a technical exercise grounded in engineered risk management, and it suggests that solutions can be optimized through the use of proper techniques and technologies.

Waste itself was treated in similar terms. The city's 1983 RFP for the WTE facility provided a paragraph on the total tonnage of garbage, with a table of by month collection tonnage by district for the previous year, as well as a map of the city's collection districts.⁴⁹⁸ In 1985, Public Works assessed the potential of recycling in Boston by estimating the amount of potentially recoverable materials in the waste stream based on an eight-year-old waste composition study from

⁴⁹⁶ Letter from David Ozonoff to Lewis Pollack, Commissioner of Health and Hospitals, May 2, 1986; Archive Loc: Collection 0246/Box V-9/Waste-to-Energy Incinerator 1-2.

⁴⁹⁷ Memorandum from Pete Watson, American REF-Fuel to Joseph Casazza, April 28, 1987; Archive Loc: Casazza Files/Box 32/WTE/Folder - American REF-Fuel, Inc.

⁴⁹⁸ City of Boston, Request for Developers of a Waste-to-Energy Project, April 25, 1983; BPL / Gov Docs/M3.B16/PW/83.2

Somerville.⁴⁹⁹ Recycling experts from outside the city offered general observations about the percentage of recyclables in municipal waste gathered in other cities;⁵⁰⁰ Flynn's advisors had determined that about half of Boston's waste was commercial, and half residential.⁵⁰¹ Frequently, advisors or members of the Flynn administration would cite aggregate numbers about the volume of Boston's waste. These general statistics left waste as an abstract, immaterial mass. It remained unexamined. Garbage was something to be gotten rid of, defined more by the properties of its exit from the city than by its own inherent qualities or content. The absence of examination of garbage as a material meant that the historic definitions remained intact. As Zsuzsa Gille reminds us, a waste regime hinges centrally on how a society understands the materiality of its wastes. In Boston, throughout the planning process, waste maintained the identity, established during the Sanitary City era as a frightful, undesirable Bad Thing to be removed as quickly as possible. By cementing this definition, Boston also upheld the more contemporary Weak Recycling Waste Regime: efficient removal remained the key civic duty of municipal leaders.

Conclusion: The Stability of the Disposal Problem through Crisis

Dominique Laporte famously quipped in his seminal *History of Shit*, "surely, the state is the sewer."⁵⁰² By this he meant that through the construction and operation of sewers, the state organizes space and behavior. The play, of course, is that government is also a dark and foul arrangement. In spite of the Flynn administration's well-meaning progressivism, Boston's politics of garbage display both meanings in equal measure. The decisions about waste management were

⁴⁹⁹ Memorandum from John L. Culp to Dan Harkins, October 29, 1985; BMA/Casazza Files/Box 32/CSI

⁵⁰⁰ Barry Commoner, "Excerpt from meeting of special committee on Waste Management," September 28, 1988; Archive Loc: Collection 0246.001 / Box V-9 / Folder Environment: Dealing with Our Trash 4

⁵⁰¹ Citizen Advisory Committee on Solid Waste Disposal, "Report to Mayor Raymond L. Flynn: Issues to Consider in Making a Long-Term Decision on Solid Waste," July 29, 1985; Archive Loc: Collection 0246/Box V-9/Waste-to-Energy Incinerator 2-2

⁵⁰² Dominique Laporte, *History of Shit* (Cambridge, Mass: MIT Press, 2000).

driven by one part old fashioned power politics and one part Sanitary City technocracy. The decisions were hugely consequential for citizens, but included their voices only minimally.

Unlike the sewerage or the conditions of the Suffolk County House of Corrections, both of which were already well-documented and even litigated, garbage in Boston was defined in relational terms. In this way, waste infrastructure in Boston during this period continued the mode of governing that characterized the Sanitary City Waste Regime. In this “disposal mode of governing,”⁵⁰³ The object of waste planning was to organize the most efficient way for garbage to disappear; whether this meant burning it in the middle of the city or exporting it to be burned elsewhere depended on entirely on contextual politics.

It is important to note that officials working for the Flynn administration, including Mayor Flynn himself, were trying hard to make a good decision. As limited as the process was, members of the administration were trying to be responsible. After the final decision not to build the incinerator was made, Neil Sullivan remembers:

I was *totally* relieved. I didn't want to put an incinerator in South Bay. Every time I drive the Pike and go by the Millbury plant, I think 'my god, I can't believe we were going to put a thing like that in South Bay.' But I also understood why we ended up there for a while. And that was, we could not control either the price of the trash disposal or the environmental impact of it. Don't underestimate how attracted we were to the latter, taking responsibility for the environmental impact of Boston's trash. It was something, you know, we policy junkies were actually real interested in, even if it was a fool's errand perhaps. But we felt we should be responsible for our own trash.⁵⁰⁴

Because of the way they defined garbage, Flynn's staff believed they had a moral responsibility not to impose that cost on another community, if possible. This permitted them to consider an

⁵⁰³ Bulkeley, Watson, and Hudson, “Modes of Governing Municipal Waste.”

⁵⁰⁴ Sullivan, Personal Interview.

unpopular, and perhaps unwise, disposal option. Without an alternative view of what trash was—the product of overconsumption, perhaps, or a stream of materials that could be used in other ways—only certain calculations were possible.

Waste reduction was never on the table, and recycling only emerged after the incinerator questions had been settled, and the city had already formalized contracts for waste export. When Mayor Flynn wrote to the city council requesting that they move to accept state funding to help the city start a recycling program, he still framed recycling centrally around waste disposal solutions:

Recycling cannot stand alone as a response to the solid waste crisis. However, every ton of trash we successfully move into recycling is a ton of trash which will not have to be burned or buried at an exorbitant disposal cost. . . . By passing this ordinance, we commit to the difficult but necessary work of organizing a viable recycling system in Boston. The special character of Boston's neighborhoods poses many challenges for the Boston recycling program. This ordinance provides flexibility to the Commissioner of Public Works to implement alternative recycling programs in different neighborhoods beginning with several pilot projects. I urge your Honorable Body to pass this ordinance, as expeditiously as possible so the City of Boston can move forward with the only in-town disposal solution currently available to Boston.⁵⁰⁵

To Mayor Flynn, who oversaw a generation of waste planning in Boston, recycling was a last resort only worth investing in after all other options for “in-town disposal” had been exhausted.

The limited planning process for waste meant that the wide range of voices, knowledges, and values evident in the discourse around waste in Boston was never brought to bear on a full range of possible alternatives. The framing of the problem of waste was never seriously challenged; the nature of waste itself was never challenged. It remained a relational substance through which politics were channeled, and that never had an identity in its own right. The solutions that were considered were therefore constrained to location and disposal technology. Thus, Boston leaned on

⁵⁰⁵ Letter from Mayor Flynn to the City Council, July 26, 1988; BMA /

a traditional, dominant, technocratically defined idea of garbage and built a system that expressed the core fundamentals of the Weak Recycling Waste Regime.

PART III : WASTEWAYS, RESISTANCE, and SUSTAINABILITY

CHAPTER 6

Alternative and Mainstream Wasteways: Progress and Inertia in Seattle and Boston's Garbage Systems from the 1980s to Today

Introduction

Over the 1980s, both Seattle and Boston faced the local realities of a nation-wide constriction of landfill capacity, and sought through various means to meet the challenge. Both cities turned at first to in-city WTE incineration as the most technologically advanced and technocratically supported solution; both cities ultimately rejected the option in favor of waste export to disposal facilities beyond their borders. However, as recounted in Chapters 4 and 5, Boston and Seattle came to their decisions to reject incineration in entirely different ways. While the on the surface the outcomes were similar, the underlying institutional and physical infrastructure for solid waste diverged considerably. The following chapter examines how the solid waste systems in Boston and Seattle have continued to evolve since the resolution of the crises towards the end of the 1980s. The transformation in Seattle led to an entirely new way of conceiving of and managing waste: a new wasteway. Meanwhile, Boston remained more closely tethered the historically defined Weak Recycling Waste Regime, and has continued to evolve along narrow pathways within the regime.

As defined in Chapter 2, wasteways are determined not by specific waste management techniques or technologies, or the most typically counted metrics of a waste system performance such as diversion rate. Wasteways, rather, account for the relationship between a city's waste system and the macro waste regime in which it is situated. This relationship is shaped by how waste is defined both explicitly and implicitly by actors responsible for managing waste; by who participates in the act of defining waste and waste problems; by the roles of various system stakeholders, in particular individuals; and, by how system managers understand themselves and the people they serve.

Boston's "mainstream wasteway" operates more or less as one might expect a creature of the weak recycling waste regime to function (see Figure 6.1 for a diagrammatic representation of wasteways). It has the hallmarks of a traditional socio-technical regime characterized by limited and incremental changes driven by actors with the most capital and thus the most power in the system. Garbage is still defined as pollution, dirt to be gotten rid of. Recent changes in the city's waste system do not challenge the fundamental relationships between citizens, the state, and private sector service providers, and certainly do not challenge contemporary patterns of production, consumption and wasting. Actors outside of city government and industry have had, and continue to have, little role in waste planning or decision-making, beyond providing the waste to be managed by the system.

The key transformations that took place in Seattle, however, created an entirely new wasteway, distinct from the American weak recycling waste regime. As a result of these changes, Seattle not only has become a leader in the nation and world for "sustainable waste management," but, perhaps more significantly, operates in a state of constant evolution. I call the city's new local regime an "alternative wasteway," because, though it, like Boston, evolves incrementally over time and shares some characteristics of path dependence, it moves in a different direction than the larger waste regime. The redefinition of waste in Seattle allowed for the creation of a new set of institutions for governing waste. These institutions support services and infrastructure that facilitate and even incentivize recycling, reuse and reduction much more than is normal under the Weak Recycling Waste Regime. In turn, the engagement that Seattle's system asks of citizens works against cultural and market-driven narratives of convenience, and also works to "de-other" garbage—to give it positive material qualities. Fundamentally, the system's emphasis on material lifecycles pushes against the indomitable one-way material march of disposability and planned obsolescence. Seattle's waste system is highly experimental and the city often encounters failure. When it pushes

too far, it is disciplined either by industry or by citizens themselves. But because the transformation of the systems relies on solid institutions and a deep base of creative professional support, it has proven resilient. As a landscape in succession, the evolution of the alternative wasteway in Seattle has led to a system that is increasingly different from the waste regime it operates within.

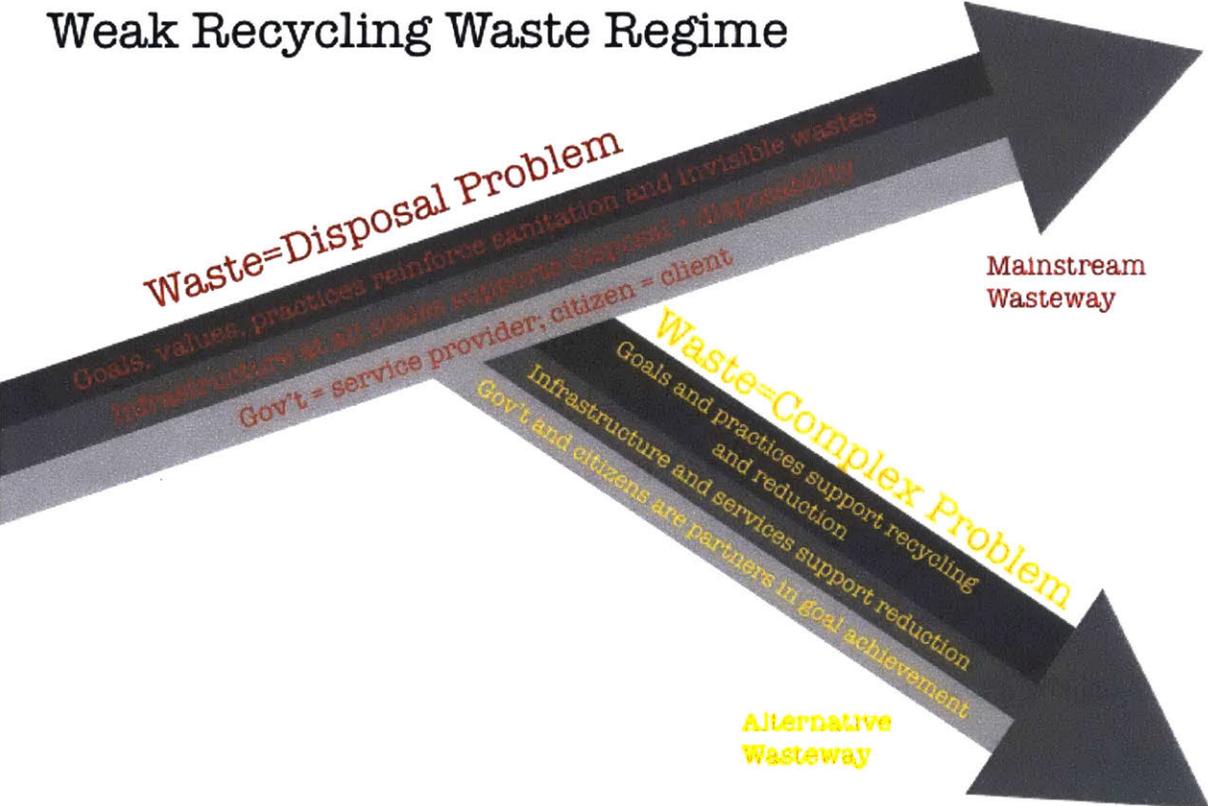


Figure 6.1. Wasteways Diagram.

Boston’s Mainstream Wasteway

Though the Boston waste system has not remained static after the final decision to export waste to Saugus rather than construct a WTE incinerator in the city, key attributes of the system have remained intact. The city has not revisited system goals or had any substantial public discourse

about waste management, either on its own, or as a substantive constituent of the city's sustainability planning. The system continues to lack capacity for planning or inclusive decision-making, and remains reliant on industry partners and waste engineers for leadership and day-to-day operations. The change that has occurred mirrors findings in the literature about innovation within a socio-technical regime: change over time is incremental rather than radical, and allows the same basic interests to continue to thrive.⁵⁰⁶ The following section will examine the introduction of curbside recycling in the early 1990s, the transition from dual-stream to single-stream recycling, and attempts by NGO activists and organizers to push for zero waste to show how the mainstream wasteway works in practice.

The quiet launch of curbside recycling

After Boston rejected the incinerator, many in Boston hoped that instead it might be replaced with a state-of-the-art recycling facility. This facility would share the South Bay site with the Suffolk County House of Corrections. The city did not expend resources on a recycling facilities plan, but Mayor Flynn proposed that the Dukakis administration consider investing in such a facility. The Dukakis administration, which had at one point had proposed and supported this idea, and did end up constructing such a facility elsewhere in the state, eventually declined. The city thus initiated its first formal recycling program on its own, without state support, without centralized recycling infrastructure, and without a developed market.

⁵⁰⁶ Unruh, "Understanding Carbon Lock-In"; Frans Berkhout, "Technological Regimes, Path Dependency and the Environment," *Global Environmental Change* 12 (2002): 1–4; Lea Fuenfschilling and Bernhard Truffer, "The Structuration of Socio-Technical regimes—Conceptual Foundations from Institutional Theory," *Research Policy* 43, no. 4 (May 2014): 772–91, doi:10.1016/j.respol.2013.10.010.

The city wasn't starting from zero however. Over the late 1980s, a group of volunteers had begun a network of drop-off recycling centers in the city. The volunteers ran monthly drop-offs at UMass Boston and in Jamaica Plain. Thousands of city residents brought their recyclables each month. The Public Works Department assisted the effort by contracting with haulers to collect the sorted materials from the drop-off centers. Three types of plastics were collected and sorted onsite, as well as newspaper, cardboard, glass, and aluminum.⁵⁰⁷ In September of 1991, building off the success of the drop-off centers, PWD launched the city's first curbside recycling program. They began with every-other-week newspaper collection in a small section of the Jamaica Plain neighborhood, and then slowly expanded to other neighborhoods in the city.

Though the city did, with the help of college student volunteers and a local non-profit, distribute fliers, run stories and ads in local papers, and distribute blue recycling bins to the neighborhood where the program launched,⁵⁰⁸ many residents remained uninformed about the new program. The launch of the program was so quiet, that one loyal recycler, Dorchester resident Margaret Toro, wrote to the Mayor to say that the program was welcomed by residents but had "been designed to fail." She cited two reasons for her assessment: first, most residents had received no information about the new program; second, the initial bi-weekly schedule was inconvenient and difficult to remember, particularly because the city only provided the date of the first pick-up and no schedule for ensuing collections. Mayor Flynn forwarded the letter to Joe Casazza who replied that PWD was doing the best it could with a limited budget for outreach and enclosed a new flyer with

⁵⁰⁷ Memorandum from Rick Innes to "Distribution," December 4, 1991; Archive Loc: BMA, Casazza Files/Box 56/Recycling 1991; Proposal Evaluation, RFP for acceptance of used newspaper, July 1, 1991-June 30, 1994, undated; Archive Loc: Boston Municipal Archives, Casazza Files/Box 56/Recycling 1991

⁵⁰⁸ Letter from Joseph P. Casazza to Howard Waddell, Director of Marketing for the MBTA, November 16, 1991; Archive Loc: Boston Municipal Archives, Casazza Files/Box 56/Recycling 1991; Boston Recycling Advisory Committee Meeting Minutes, September 18, 1991; Archive Loc: BMA/Casazza Files/Box 56/Recycling 1991

information about the collection schedule.⁵⁰⁹ Other assessments of the city's program were equally unimpressed.

The early assessment of Boston's recycling launch highlights key characteristics of the new program that distinguish it from similar program launches in Seattle, and that position the program within a mainstream wasteway. First, the lack of resources for communicating with residents and the limited nature of information that was ultimately communicated indicates that the city that the city was not prepared to invest in citizen outreach or participation. In other words, the city did not view citizens as a significant part of the system. They designed a system that met technical and economic specifications to do to so, relied on the traditional experts who had guided the system to date, the engineers. Also, the fact that Mayor Flynn did not reply to Toro's letter himself, but rather forwarded it to Commissioner Casazza indicates that this was not a political priority; recycling was a technical customer service matter for PWD to manage. The bottom line was that recycling was a part of waste management, carrying forward the implicit problem definitions and end-of-pipe orientations that come along with that traditional framing.

Other key pieces of the new program further reinforced the traditional organization and priorities of the city's waste system. For instance, to launch the first curbside recycling pilot, the PWD amended the contract with its waste hauler, BFI—one of the country's largest waste management firms—rather than finding a contractor with expertise in recycling.⁵¹⁰ The move to make a minor contract amendment rather invest in the right expertise further indicates that the recycling program was viewed as a minor amendment to garbage hauling.

⁵⁰⁹ Letter from Margaret Toro to Mayor Flynn, October 25, 1991; Letter from Joseph Casazza to Margaret Toro, November 12, 1991; Archive Loc: BMA/Casazza Files/Box 56/Recycling 1991

⁵¹⁰ Letter from Joseph Casazza to Mayor Flynn, October 22, 1990 (BMA/Casazza Files/Box 56/Recycling 1991)

A *Boston Herald* article in 1991 reported on the results of a MassPIRG survey that found Boston not only had the among the lowest recycling rates of large cities in the U.S., it also spent the lowest amount per capita on recycling programs and employed the fewest staff. In response to criticism about the disappointing roll out of the city's recycling program, the city, in continuation of the pattern of politicking established through the debate around the South Bay Incinerator, pointed fingers at the state. The article noted that a Flynn administration official and said that "Boston would now be recycling 25 percent if Flynn's proposal to build a Materials Recovery Facility had not been vetoed in 1988 by the Dukakis administration." According to MassPIRG, the lack of recycling was due almost exclusively due to underinvestment by the city. Boston residents, MassPIRG noted, had already shown an "unusual willingness to participate in recycling programs." The *Herald* article even directly compared Boston's dismal recycling rate, then at 7%, with Seattle, which by 1991, was diverting 44% of material in the residential sector from the landfill.⁵¹¹

Other evidence also suggests that city residents were way ahead of the city government; residents from neighborhoods excluded from the initial pilots wrote to the Commissioner Casazza and the City Council about their individual organizing efforts, and asking for the city's recycling program be expanded.⁵¹² Seeing the widespread support for recycling among residents, the city did increase the budget for the program during its second year, despite widespread budget cuts across the board. The money, however, was not sufficient to alter the city's wasteway. The same professionals

⁵¹¹ Kennedy, Helen, "Hub gets trashed in recycling survey," *Boston Herald*. Date not included in news clipping (BMA/Casazza Files/Box 56/Recycling 1991).

⁵¹² Letter from Marya P. Labarthe to Joseph Casazza, January 3, 1991; Letter from the Jamaica Plain Recycling Task Force to Joseph Casazza, February 1, 1991; Letter from Cynthia Grubbs to Joseph Casazza, February 7, 1991; Letter from Julie McVay to Stan Gross, April 8, 1991; Archive Loc: BMA/Casazza Files/Box 56/Recycling 1991

remained at the helm, the same contractors provided services, the program remained narrowly defined.

Overall, the actors centrally involved in the recycling program did not view it as part of a larger transition. While various actors did acknowledge potential environmental benefits of recycling, these observations were framed as nostalgic references to earlier generations of frugality rather than concrete environmental protections. The priorities emphasized by political leaders continued to be job creation and political maneuvering.⁵¹³

From dual- to single-stream: the private sector guides socio-technical innovation within regime boundaries

Since the initiation of curbside recycling in the early 1990s, several actors in Boston's system have worked at different levels to challenge the disposal-oriented system. Among efforts by the state, the NGOs and private sector recycling industry, only the private sector succeeded in instituting change to the residential waste sector managed by the city. This change was limited was reflective of socio-technical innovation within a strong regime; in other words, it served to reinforce rather than challenge, Boston's mainstream wasteway. It made a narrow shift with a minimal impact that failed to resist the rationalities or priorities that constitute the broader system.⁵¹⁴

In 2009, Boston moved from dual-stream to single-stream recycling.⁵¹⁵ Instead of having residents separate paper from plastic, glass, and metals, all materials were comingled and collected in large, wheeled carts. Many cities in the region were making the same move at the time; waste managers

⁵¹³ Draft Order of Councilor Rosaria Salerno, undated; Remarks of Mayor Raymond L. Flynn, Beginning of City-wide Curbside Recycling Collection in Boston, Draft, September 16, 1991; Archive Loc: BMA/Casazza Files/Box 56/Recycling 1991

⁵¹⁴ The following discussion is drawn substantially from the following article: Pollans, "Trapped in the Disposal Mode: 'Modes of Governing' and Barriers to Transitioning to Sustainable Waste Management."

⁵¹⁵ Jenna Nierstedt, "Boston to Begin No-Sort Recycling Program July 1," *Boston Globe*, June 24, 2009, sec. Metro.

and recycling coordinators hoped that it would substantially increase recycling rates.⁵¹⁶ In Boston's case, according to waste managers, the move resulted in a 45% increase in the amount of recyclable material collected. This leap, however, only took the residential sector from about a 12% recycling rate to a 17% recycling rate,⁵¹⁷ still well below the national average, and did not affect the commercial sector at all.⁵¹⁸

The key factor in the transition to single stream, though, is not the numbers, but rather the way the change occurred. The private firm that held the recycling collection contract for residential waste in Boston retrofitted its sorting plant to accept single stream materials, and began to encourage their customers to move to single stream. Boston, which had no budget for programmatic innovation, was finally enticed to shift to single stream recycling when a private company offered a free trial of 64-gallon recycling carts. The city implemented a pilot in one neighborhood. Other neighborhoods, seeing the convenience of a single receptacle for recycling, started to request the larger carts almost immediately. But what really impressed the city's waste managers

was...the cleanliness of it. The superintendent of sanitation...really liked the cleanliness part and wanted to take the carts that we had leftover to a downtown neighborhood that has a real trash problem...⁵¹⁹

The transition to single stream was partly motivated by a desire to increase the city's diversion rate, and can thus be understood as a move towards what Harriet Bulkeley calls "a diversion mode of governing." But the tidiness of the new, larger, single-stream carts was a material factor in convincing waste managers to find the funding to take the program city-wide. As evidenced by

⁵¹⁶ Matt Carroll, "Recycling Becomes Cash Cow: New Systems Gain Popularity, Profits," *Boston Globe*, September 11, 2008, sec. South; Susan Cascino, Personal Interview, January 31, 2012.

⁵¹⁷ City of Boston, "Mayor's Performance Report: Boston Public Works and Transportation Departments."

⁵¹⁸ Further, evidence suggests that single stream recycling results in higher contamination. The gain at the point of collection is reduced because of the amount of material that is disposed after sorting Calvin Lakhani, "A Comparison of Single and Multi-Stream Recycling Systems in Ontario, Canada," *Resources* 4, no. 2 (2015): 384-97; Clarissa Morakawski, "Single Stream Uncovered," *Resource Recycling* 3 (2010): 17-39.

⁵¹⁹ Susan Cascino, Personal Interview, 2012

Commissioner Casazza's role in Keep America Beautiful, cleanliness and efficient removal of waste had been a key feature of the end-of-pipe disposal orientation that has characterized Boston's system for decades. Thus, not only was the transition to single stream recycling not initiated by the city, it also ultimately served to reinforce one of the key rationales underpinning the current mode. Although waste managers will always have a public health responsibility, this episode reveals the degree to which Boston's waste managers themselves view the system and their role in it, even when alternative rationales are pressing and alternative practices are available. City officials actively work to reinforce the waste regime by making waste removal as efficient and clean as possible.

The Boston Recycling Coalition Butts up against the Regime: the distant dream of zero waste

Just as NGO activists failed to substantially influence waste decisions in the 1980s, actors outside of the PWD continue to have difficulty accessing decision-making processes and influencing policy and programs. The Boston Recycling Coalition (BRC), a group of labor and environmental activists, has, over the last several years, organized around the potential labor, environmental, and community economic benefits that a Zero Waste program could offer Boston. The group penned a report arguing that the city could experience substantial job creation, community participation, and reduced disposal costs through a Zero Waste program.⁵²⁰ By emphasizing reuse, community-driven recycling and composting, green job creation, and the protection of natural resources, the plan reorients waste management as socially aware, economically redistributive, and environmentally beneficial, in much the same way that as outside voices did in Seattle in the 1980s. Implementing such a vision would represent a dramatic transition from the disposal-dominant system.

⁵²⁰ Boston Recycling Coalition, "Opportunities in Boston's Waste/Recycling Sector," May 2013.

In 2013, the BRC group took advantage of an ongoing mayoral campaign to educate candidates about the state of solid waste management in the city, and sought to influence a contract renewal process for the city's haulers. The mayoral candidates, and then ultimately, the new mayor were open to meeting with representatives of the group, but the BRC was unable to make any substantive changes to the city's collection and disposal contracts. Over the last year prior to this writing, members of the BRC were able to secure meetings and hold events with many key members of the Mayoral administration, including members of the Mayor's sustainability staff. While the BRC reported interest across city government, members also noted that competing priorities in the environmental sphere threatened to keep Zero Waste off the political agenda.⁵²¹

Over the years, members of the group have expressed frustration that it has been so difficult to find meaningful pathways into the city's solid waste decision-making, at political and operational levels. Their failure to do so is evident both in the city's languishing recycling rate and the city's continued reliance on the Saugus incinerator. Both the structure of the Boston system that externalizes the costs of waste disposal and provides no avenues for inclusive planning are hallmarks of the city's mainstream wasteway. These features of the system keep the BRC and allied advocates at a distance from decision-making processes. The progress that has been made, namely the transition to single stream, was a narrow shift defined by the private sector recycling industry, with limited impacts on the overall recycling rate, and no appreciable challenge to the waste regime. The lack of public discourse about waste in Boston has meant that stakeholder roles have remained static, and the definition of waste has remained static too.

⁵²¹ Bess Beller-Levesque, BRC Member, Email to the BRC, 2015.

Seattle's Alternative Wasteway

Over the 1980s, key redefinitions and reorientations within the Seattle's wasteway were slowly enshrined through ordinances and resolutions of the city council. The city council process provided formalizations of new approaches that bit by bit reshaped the city's approach to waste management. In 1989, at the end of a tumultuous decade of solid waste planning, Seattle's solid waste utility released a plan titled "The Road to Recovery: Seattle's Integrated Waste Management Plan." This plan was both the culmination of ten years of upheaval, redefinition, uncertainty, and redirection, but also a key formulation of Seattle's novel approach to waste management. It formalized a new direction and made clear the city's intention to depart from the Weak Recycling Waste Regime: "With this plan," the introduction intoned, "the City of Seattle sets itself firmly on the road towards a future quite different from the present." But already, the plan observed that "Recycling has become a way of life in Seattle."⁵²² By the time this plan was published the average subscription had dropped from 3.5 cans of garbage in 1981 to 1.4 cans of garbage per household in 1989; many residents had adopted a practice of home composting yard waste; and, recycling had become commonplace in public spaces. In August of 1989, the Seattle City Council institutionalized the plan by legally adopting it through city ordinance.⁵²³

Since the adoption of the 1989 plan, the city has made many concrete steps programmatically.

Seattle now offers curbside collection of recyclables, yard waste, and food waste. It offers recycling of a wide range of materials from fluorescent bulbs to construction waste at its state of the art transfer station, located in the city. It strictly regulates commercial waste and recycling and offers a variety of training and educational programs to help residents compost at home, and comply with

⁵²² City of Seattle, "On the Road to Recovery: Seattle's Integrated Solid Waste Management Plan," August 1989.

⁵²³ City of Seattle, "Ordinance 114691" (1989).

the city's increasingly strict laws. The result is a nationally exemplary recycling rate of 58%, that notably includes both commercial and residential waste, as of 2015.⁵²⁴

But service provision alone was not sufficient to garner enough participation to move the city towards its goals. Over the last twenty-five years, Seattle has slowly rebuilt regulatory frameworks, enforcement strategies, service provision patterns, and customer habits. The new definitions and roles established through Seattle's planning process were abstract and conceptual, but they also became, bit by bit enshrined in resolutions, plans, and practice. With each new set of rules, programs and practices, expectations shifted and possibilities progressed.

In locked-in systems, institutions, industries and technologies “interact to create a self-referential system that tends to increase in value with the growth of the technological system.”⁵²⁵ Thomas Hughes calls this self-reinforcing positive feedback that “resist[s] changes in the direction of development,” “momentum.”⁵²⁶ The case of Seattle indicates that momentum can also characterize a self-reinforcing system of change. The city's alternative wasteway has continued to adapt to new conditions, respond to external stimuli, recalibrate when disciplined by the larger societal waste regime, and move incrementally towards ever more ambitious targets, all the while building institutions to resist the return to its former pathway. The alternative wasteway is characterized by momentum, just as the mainstream wasteway is. The alternative wasteway, however, instead of reinforcing the waste regime, works perpetually to resist it by establishing a clear alternative set of goals.

⁵²⁴ Seattle Public Utilities, “2015 Recycling Rate Report.”

⁵²⁵ Unruh, “Understanding Carbon Lock-In,” 824.

⁵²⁶ Thomas P. Hughes, *Networks of Power: Electrification in Western Society 1880-1930* (Baltimore and London: Johns Hopkins University Press, 1983), 140.

As Seattleites meet the challenge of ever more aggressive garbage programming, consistent support and pressure from both the City Council and the Mayor have promoted an environment of continual striving towards ever-more ambitious goals. When a plateau is reached in one area, like single-family residential recycling, new targets are identified like multi-family or commercial recycling.

Seattle's alternative wasteway is enacted through advancing the actual targets for waste reduction and diversion, as well as constant programmatic innovation to achieve those targets. In tracing the broad contours of system change after the 1980s, we can see ways that the city experiments, adapts, and reacts when disciplined. Over the late 1980s and 1990s, the city institutionalized this new wasteway through a series of new ordinances and resolutions that established key frameworks for monitoring, planning, and of course, targets. In response to the new legal frameworks, the Utility developed new programs that continued to advance the key shifts that took place in the 1980s: the continued reframing of waste as a resource, nurturing new habits and customs, and reframing the roles of citizens and state.

Plans and goals: the framework for the alternative wasteway

Since 1989, the city has reevaluated its goals and targets several times. Even when it has failed to meet its goals, the city has remained committed to an ever more ambitious pursuit of a transformed waste management system. Resolution 27871, adopted October 3, 1988, formally set a city-wide recycling goal at 60% by 1998, over and above the 40% that had previously been established. Further it identified waste reduction as a top priority with specific programmatic ideas about how to promote it; and finally, it established that the city would develop a plan to transport un-recycled

waste to a distant landfill rather than invest in energy recovery or continue landfilling in the region.⁵²⁷

These resolution, followed by many more, established a new baseline. They served as the starting point for programmatic development and continued institutional change through a number of key elements of the city's wasteway. In the ensuing decades, the Solid Waste Utility, the Mayor, the City Council, Seattle residents, Seattle businesses, King County, the State of Washington and a variety of allied and contrary interests have continued to negotiate, experiment, plan, and evaluate all the while making slow progress away from the Weak Recycling Waste Regime and towards ever-more-ambitious Seattle system goals.

In 1998, the 60% diversion goal was affirmed, but the date pushed back to 2010; in 2004, the 60% goal was affirmed again, but the date was pushed back to 2015. Despite the difficult of achieving 60% reduction, the city continued to push for more ambitious heights. Resolution 30990, which the city refers to at the "Zero Waste Resolution," adopted in 2007, tweaked the diversion goals to 60% by 2012 and 70% by 2025. It also established that Seattle would not dispose of any more solid waste than went to the landfill in 2006; in essence establishing a cap on solid waste generation. Finally, the resolution established that the solid waste utility would have to produce a report, by July 1 of each year, on the city's progress towards these goals, as well as short-term plans for coming years.⁵²⁸ Four years later, the City Council adopted a new revision of the comprehensive solid waste plan, which included further amended goals: recycle 60% by the year 2015, and to recycle 70% by 2022. For the first time, Seattle also established a recycling goal of 70% by 2020 for construction

⁵²⁷ City of Seattle, "Resolution 27871" (1988).

⁵²⁸ City of Seattle, "Resolution 30990" (2007),

http://clerk.ci.seattle.wa.us/~legislativeItems/Resolutions/Resn_30990.pdf.

and demolition debris.⁵²⁹

In the summer of 2016, in a report released exactly on schedule, Seattle Public Utilities reported that the city recycled 58.0% of commercial and residential waste in 2015—achingly close the 60% goal, but not quite there.⁵³⁰ Over the course of the last three decades, the city has continually fallen short of its ambitious recycling goals. The constantly recalibrated target years and amounts, however, demonstrate that these are not considered failures, but rather evidence of ambition. By tugging the 70% target year ever sooner, the city reestablishes its intention to continue striving, even while adding percentage points becomes increasingly difficult. And, while recycling goals have remained elusive, the city has, despite a growing population, reduced waste generation nearly 13% from the 2006 base year (although, the utility credits this drop at least in part to the results of the economic crisis more than specific programs targeting waste reduction). The reduction, however, paired with increasing recycling means that the amount of waste being landfilled has dropped by more than 30% since 2006;⁵³¹ a number that is more meaningful environmentally than the recycling rate itself.

Seattle's 1998 solid waste plan titled, "On the Path to Sustainability," provided a detailed roadmap to get the city to zero waste, making Seattle among the first cities anywhere in the world to formally propose zero waste as a realistic municipal goal.⁵³² The city's most recent plan advances the city's ambitions even further. It recognizes solid waste as a complex socio-economic phenomenon,

⁵²⁹ City of Seattle, "Resolution 27871" (1988); City of Seattle, "Resolutions 29805" (1998); City of Seattle, "Resolution 30750" (2005); City of Seattle, "Resolution 31426" (2013), http://clerk.ci.seattle.wa.us/~legislativeItems/Resolutions/Resn_31426.pdf.

⁵³⁰ Seattle Public Utilities, "2015 Recycling Rate Report."

⁵³¹ Ibid.

⁵³² Seattle Public Utilities, "Seattle's Solid Waste Plan: On the Path to Sustainability," August 1998 (SMA/Report #4285).

shaped by programs, physical infrastructure, and attitudes. It presents a clear vision that engages all aspects of the system. The plan addresses the impacts of the recent recession and recovery on the waste stream, as well as the implications of a housing boom that is mostly high-end multi-family as opposed to single-family housing. It includes an entire chapter on waste prevention that looks equally to behavior change, city and state policy frameworks, and infrastructure development to continue the tough project of generating less garbage at all levels.⁵³³

Monitoring and Reporting: public accountability and staying on track

Many cities, including Boston, have formally adopted diversion rate goals that are meaningless because no one ever assesses how close the city is to achieving them. In Seattle, the waste reduction and diversion goals are relevant to everyday waste management and policy because of consistent attention to and investment in monitoring, reporting, and contingency planning. Monitoring and reporting play a key role in the alternative wasteway; without them, Seattle publics and elected officials would have no way of gauging and celebrating progress. In addition to demanding monitoring and reporting through resolutions and ordinances, Seattle's city council also frequently asks explicitly for contingency plans in the event that goals aren't met. The combination of monitoring, reporting, and contingency planning requirements act as reinforcements to the city's momentum, and thus play a key role in constituting the city's alternative wasteway.

A September 1987 resolution determined that the Solid Waste Utility would produce an annual recycling report in order to set annual recycling goals towards the larger goal of 40% by 1997 and "provide contingency plans if those goals are not met."⁵³⁴ Further it directed the Utility to develop a

⁵³³ Seattle Public Utilities, "Picking up the Pace to Zero Waste: Seattle's Solid Waste Plan, 2011 Revision" (City of Seattle, 2013).

⁵³⁴ City of Seattle, Resolution 27867.

database and monitoring mechanism to assess recycling program performance. The emphasis on monitoring, reporting and contingency planning at this stage indicated an understanding that goals not would be achieved quickly or abruptly. Rather, these nascent institutions of the new wasteway were being structured to accommodate progress and regress, changes in context, new directions, and as yet unimagined possibilities. When the City Council adopted a 60% diversion goal a few years later, they maintained the emphasis on monitoring and contingency planning:

The tons of recyclables recovered shall be monitored at regular intervals to check on the City's progress in meeting its goal. If a particular programs recovering substantially fewer tons than predicted in the FEIS, and it appears that the goal will not be met, then the Solid Waste Utility shall recommend a new or revised program that will accomplish the City's 60 percent goal.⁵³⁵

The processes of monitoring and contingencies allows for political accountability. It is a way to daylight the traditionally black-box operations of waste management. But is also a way to continue to involve Seattle's residents in the achievement of the city's goals. Each year, the Utility's recycling and reports are released with press events.⁵³⁶ The reports are available, back to 2007 when the annual recycling reporting requirement was formalized, on the Utility's website. The reports, along with a series of other regular reports on operations and recycling market conditions, form the backbone of program development.

Norms, behavior, expectations

As services have expanded and requirements increased, Seattlites have become accustomed to more intimate relationships with their discards. Residents in single family homes routinely recycle or compost more than 70% of household trash, a feat that requires thoughtful treatment of everything

⁵³⁵ City of Seattle, Resolution 27871, 1988.

⁵³⁶ Tim Croll, Personal Interview, January 8, 2015.

from coffee grounds to worn out boots to pet carcasses.⁵³⁷ While average household waste handling practices in Seattle today are quite different than they would have been in 1990, the changes have been slow and have normalized shifts that might appear quite radical in other contexts. The result is that when Seattlites travel, they often experience a distinct kind of unease—the same unease that one might experience at being asked to touch garbage—at the idea of throwing perfectly compostable squash rinds into a landfill-bound trash can. Utility managers now hear feedback from Seattlites who are horrified at the lack of recycling and composting infrastructure when they travel to other cities. City leaders count it as a success that for many Seattlites, throwing compostable material into a garbage bin now simply feels wrong, like littering.⁵³⁸ As new rules have unfurled, residents have, by and large, gamely complied.

To be clear, though Seattleites were always good recyclers, these shifts in household practices cannot only be attributed to Seattle residents' preternatural affinity for sustainable waste handling. One local newspaper recently surveyed its own trash to discover a rather embarrassing quantity of recyclables in the garbage cans.⁵³⁹ And there are plenty of residents who have complained over the years that the city's tactics are heavy handed. Don Hannula, a regular columnist for the *Seattle Times*, has given voice to these opinions with snarky commentary on Seattle's heavy-handed waste management techniques for decades, a reality check against assumptions of a population entirely devoted environmental protection.⁵⁴⁰ Rather, the incremental introduction of new practices, along

⁵³⁷ Aaron Spencer, "Ins and Outs of Recycling," *Seattle Times*, March 1, 2015; Seattle Public Utilities, "2015 Recycling Rate Report."

⁵³⁸ Art James, "Unsettling Difference - Why Doesn't Tacoma Urge Garbage Recycling?," *Seattle Times*, January 23, 1995, FINAL edition, sec. Letters to the Editor; Ray Hoffman, Personal Interview, January 13, 2015.

⁵³⁹ Aaron Spencer, "A Case Study in Trash Sorting: Inspecting the Bins at The Seattle Times," *Seattle Times*, August 13, 2015, <http://www.seattletimes.com/seattle-news/going-through-the-trash-in-the-seattle-times-breakroom/>.

⁵⁴⁰ Don Hannula, "A Stacked Deck? Tiptoeing toward the Garbage Curb," *Seattle Times*, November 7, 1986, sec. Editorials and Opinion; Hannula, "Today's Seattle Rate Increase New Challenge for the Garbage Gestapo"; Don Hannula, "No Wonder We Do the Garbage Can Stomp," *Seattle Times*, February 6, 1987, sec. Editorials and Opinions; Don Hannula, "Warning: The Garbage Gauge Cometh," *Seattle Times*, June 12, 1991, sec. Editorials and Opinion; Don Hannula, "The Garbageman Cometh (Whenever He Pleases)," *Seattle Times*, September 22, 1993, sec. Editorials and

with financial incentives, carefully considered education campaigns, and eventually legal requirements with reliable enforcement, has swept most Seattlites along in the creation of new habits that have eventually become normalized.

As residents have accommodated new habits, new relations to their discards, and new laws, Seattle's waste management has also continued to redefine the role of the state. In 1988, Resolution 27828 directed the city government to procure recycled products, reduce the use of single-use items, and to recycle. As part of the larger redefinition of roles and responsibility of citizens and state, this resolution articulates the city government as a consumer and waste generator (in essence, a citizen) with the same responsibilities as citizens. In a direct articulation of this role, the resolution states:

Seattle City Government has a responsibility as a member of the greater community to develop policies and practices for its own operations to assist the City in achieving its recycling and composting goals.⁵⁴¹

This resolution was followed by another that formally adopted specific policies recommended by the Mayor to achieve the goals laid out in Resolution 27828. The recommendations included procurement of recycled paper, and recycled paper products, a plan to phase out Styrofoam and plastic beverage containers, department by department waste reduction plans, and increased recycling in city departments.⁵⁴² These resolutions were soon followed by an ordinance banning city-purchase of polystyrene foam and beverages in plastic containers.⁵⁴³ Through these resolutions, new limits were imposed on state action. The resolutions forced the city government to recon with its role as a consumer, to coordinate among departments and agencies that typically operate

Opinion, <http://community.seattletimes.nwsouce.com/archive/?date=19931028&slug=1728387>; Don Hannula, "What's Next for Seattle: A Ph.D. in Composting?" *Seattle Times*, August 17, 1995, FINAL edition; Don Hannula, "Keep a Stiff Upper Lid on the Ol' Garbage Can," *Seattle Times*, November 30, 1995, sec. Editorials and Opinion.

⁵⁴¹ City of Seattle, "Resolution 27828" (1988).

⁵⁴² City of Seattle, "Resolution 27980" (1989).

⁵⁴³ City of Seattle, "Ordinance 114035" (1988).

independently, and to participate fully and actively in the pursuit of waste management goals through multiple channels outside of traditional role as service provider to residents.

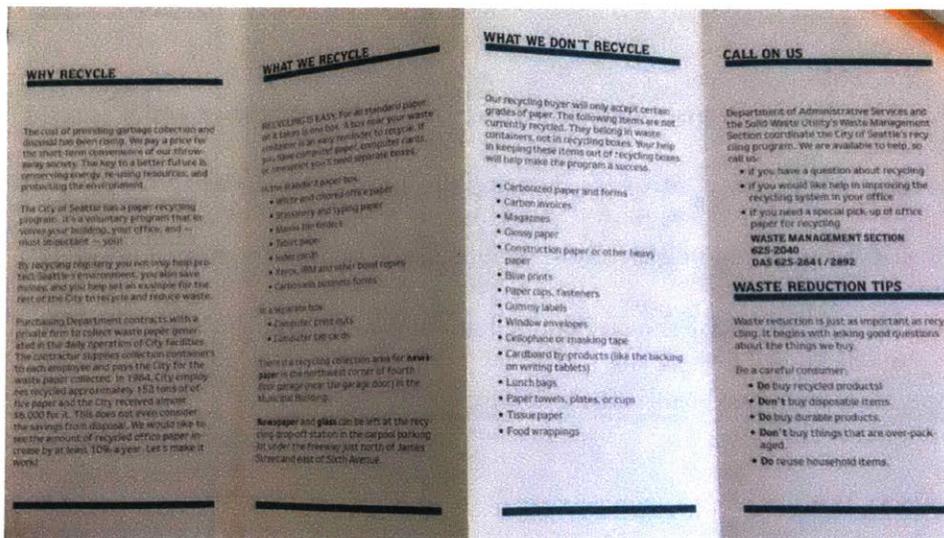
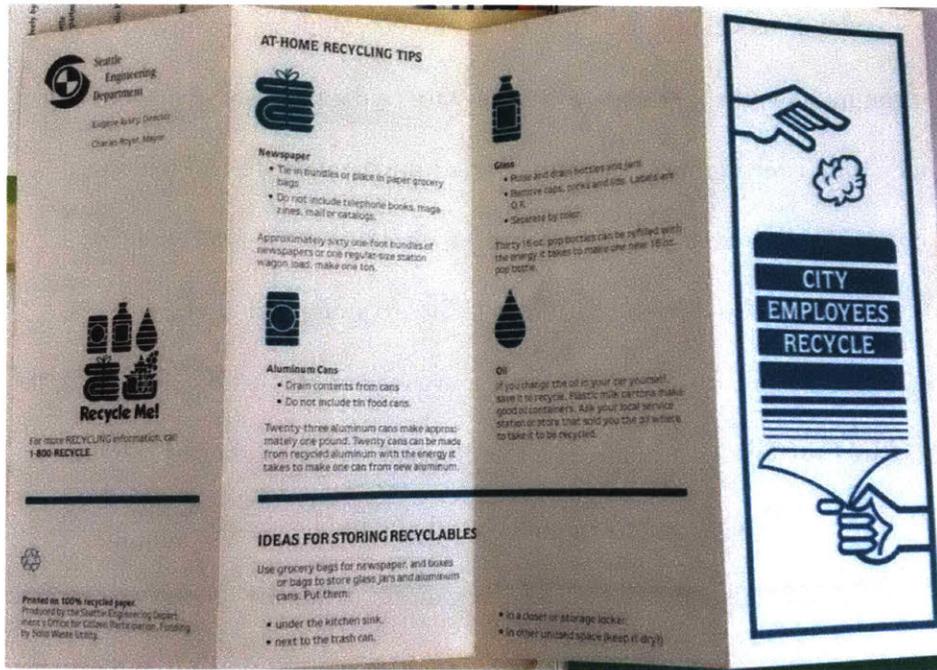


Figure 6.2. An informational pamphlet describing recycling rules to city employees (SMA/2600-06/1-1).

As roles and responsibilities of both residents and the city government have evolved, the city has moved away from reliance on voluntary action alone. During the planning throughout the 1980s, both the Mayor and the Utility remained committed to voluntary action, even while some City

councilors pushed for mandatory Recycling. The Mayor and Utility leaders hoped that with convenient service and educational outreach, Seattlites would be compelled to recycle. This was true to a point; the city saw a spike in recycling rates after curbside recycling was extended to the entire city. However, after the initial spike, participation rates stabilized and waste managers began to consider new methods including exerting more control over commercial waste and making recycling mandatory. Changes were slow in coming, and thoroughly studied. In 1992, the City Council adopted a Resolution that permitted the Solid Waste Utility to study and develop recommendations for exerting local regulatory control over commercial waste, which, according to the resolution constituted 60% of the city's waste stream. The Resolution established at least six potential options ranging from no change to complete takeover by the public sector, and requests that the utility study them all.⁵⁴⁴ The Utility studied the issue, but didn't make any changes to service immediately.

After years of study, in 2005, the city finally instituted mandatory recycling for homes and businesses. Mandatory recycling was highly controversial during the 1980s, but it was an easy sell in the early 2000s. Seattle's Mayor at the time, Greg Nickels, proposed the new rules to the City Council in 2003; the Ordinance was passed by the city council unanimously, with little debate. Mandatory recycling of paper and cardboard took effect on January 1, 2005.

A key issue in this transition was the development of enforcement tactics. The Utility was thoughtful about how to get residents up to speed, particularly as the city was starting to fill with newcomers moving in with the burgeoning tech economy. Over the first year, residents received warnings and notifications about the new rules. Starting in 2006, residents with too much paper and

⁵⁴⁴ City of Seattle, "Resolution 28637" (1992).

cardboard in the trash received three warnings and then a \$50 fine. The utility was careful about how they did inspections. Bret Stav, a spokesman for the Utility at the time told the *Seattle Times* that “We're not training people to go in with a magnifying glass. Inspections will be based on immediate visual recognition.”⁵⁴⁵ While some struggled to adapt to the new rules, Tim Croll, then head of Solid Waste, told local reporters that the Utility had received lots of questions about how to comply, but very few complaints.⁵⁴⁶

Later the same year, the city rolled out new organic waste collection containers that could accommodate both yard waste and food scraps. Not all residents were entirely sanguine about the further complication of separating food scraps in addition to recycling, and to ease the transition, it began as completely voluntary. The city distributed the bins, conducted a widespread public information campaign through a variety of local media, and provided a variety of educational materials directly to households.⁵⁴⁷ Even with the voluntary program, the city saw an immediate 44% increase in organics curbside collection in 2005.⁵⁴⁸ Mandatory composting was approved by the City Council unanimously in September 2014, and took effect in January 2015, with little fanfare.⁵⁴⁹

Each of these incremental steps—the role out of new containers, the launch of educational campaigns, and eventually the establishment of mandatory practices with enforcement procedures

⁵⁴⁵ Bob Young, “Recyclables Now Must Be Kept out of Garbage,” *Seattle Times*, January 1, 2005, Fourth edition; Elizabeth M. Gillespie, “Recycling Effort Ratchets up,” *Seattle Times*, February 6, 2005, Fourth edition; City of Seattle, “Ordinance 121372” (2003).

⁵⁴⁶ Young, “Recyclables Now Must Be Kept out of Garbage”; Gillespie, “Recycling Effort Ratchets up”; City of Seattle, Ordinance 121372.

⁵⁴⁷ Susan Gilmore, “Gearing up to Help the Planet,” *Seattle Times*, June 16, 2005, Fourth edition; Jerry Large, “Waste Can Be a Terrible Thing to Mind,” *Seattle Times*, July 3, 2005, Fourth edition.

⁵⁴⁸ Seattle Public Utilities, “Yard Waste Report” (Seattle, WA, December 2005), http://www.seattle.gov/util/cs/groups/public/@spu/@garbage/documents/webcontent/COS_004534.pdf.

⁵⁴⁹ City of Seattle, “Ordinance 124582” (2014); Spencer, “Ins and Outs of Recycling.”

to ensure compliance—has been carefully calibrated to nudge the existing system away from conventional waste management and towards ambitious goals. With each incremental step, elected officials have been patient, and the Utility has been responsive to problems and complaints. In each case, after an initial flurry of press, the changes have faded into normalcy, especially in the realm of single-family homes, which currently has the highest diversion rate of all sectors in Seattle.

Infrastructure and system design

While Seattle has slowly rebuilt regulatory regimes, implemented new programs, and constructed a new social context for waste-making and waste management, it has also redesigned the physical infrastructures of waste collection, sorting, and treatment. At the smallest, most distributed scale, Seattle distributes uniform garbage pails to all single-family residences. Starting in the late 1980s, when residents choose their level of garbage service (how much garbage they pay to throw away every week) they receive garbage, recycling, and organics bins from the Solid waste utility. The move aligned with the institution of variable rate pricing, and serves to connect households⁵⁵⁰ not only allow people to easily assess their neighbors' waste habits, but also provides an additional layer of connectivity between the Utility and its customers.

⁵⁵⁰ This is only the case for small buildings where residents manage their own trash collection; residents in large, multi-family buildings over five units have dumpster arrangements that don't provide the same signals.



Figure 6.3. *The spread of trash cans for Seattle households subscribed to the “micro-can” rate. All households receive the same recycling and organics bin, but choose the size of their trash bin (the small black box pictured here). There are larger can options available. Photo by author, 2014.*

The relative size and costs of carts is fully integrated into the city’s system goals. The cost of the different subscriptions is supported by the size of the different cans, both of which serve to support less garbage production. In a signal that the pricing is effective, 14% of households subscribed to the micro can rate; 30% to mini can rate, 50% to a single can, and only 6% to a two can rate, putting Seattleites well ahead of others in waste minimization.⁵⁵¹

Over the last decade, Seattle has rebuilt its two local transfer stations for the same purpose. The city of Seattle owns and operates two transfer stations. In addition to the city-provided bins and carts, the transfer stations are the physical presence of the Solid Waste Utility in the city, and as such are

⁵⁵¹ Seattle Public Utilities, “Garbage Report, 2nd Quarter” (City of Seattle, August 11, 2016), http://www.seattle.gov/Util/cs/groups/public/@spu/@garbage/documents/webcontent/1_051718.pdf.

both materially and symbolically significant. Originally built in the 1960s, the two stations were designed to consolidate the city's garbage for efficient transfer and disposal. The stations were designed as huge sheds built around enormous pits into which garbage was dumped and then compacted. This design made extraction of potentially recyclable materials, or banned materials, next to impossible. In addition, facilities lacked adequate capacity, were outdated, smelly, far from earthquake ready, and unable to handle a changing waste stream.⁵⁵²

The inadequacies of the transfer stations were identified in the 1998 Solid Waste Comprehensive Plan; a strategy for upgrading was elaborated through an intensive planning process that resulted in the 2003 Draft Solid Waste Facilities Master Plan whose recommendations were ultimately included in the 2004 amendments to the Comprehensive Plan. Both the planning process and the design outcomes highlight key elements of Seattle's alternative wasteway, and the fundamental transitions in problem and material definition that led to it.

The planning process for the transfer stations was characteristically intensive and inclusive. The process included meetings and other avenues for input specifically targeted to neighbors, city residents, and Utility customers; advocacy and civil society organizations; transfer station employees; King County officials and staff, waste haulers; business that use the transfer stations; and solid waste, recycling, zero waste, and other industry experts from across the country.⁵⁵³ The breadth of outreach is characteristic of SPU's planning approach. As with the critical planning processes throughout the 1980s, this process seriously engaged expertise from a variety of sources,

⁵⁵² Seattle Public Utilities, "Draft City of Seattle Solid Waste Facilities Master Plan" (Seattle, WA: Seattle Public Utilities, November 2003),

<http://www.seattle.gov/UTIL/MyServices/Garbage/AboutGarbage/SolidWastePlans/FacilitiesPlan/index.htm>.

⁵⁵³ Seattle Public Utilities, "Draft City of Seattle Solid Waste Facilities Master Plan, Appendix B: Public Involvement Report and Meeting Summaries," November 2003.

including waste workers themselves, who have traditionally been marginalized in planning and policy.⁵⁵⁴ Recommendations from these sectors ran the gamut from concern about worker safety, to the logistics of temporarily closing a transfer station, to effective design for better materials management.

The goals for the transfer station redesign, were established through the comprehensive planning process and then codified through a city council resolution. The goals reinforce many of the core shifts that took place during the 1980s, including an emphasis on balanced fiscal and environmental costs and a recognition of the temporal, spatial, and material characteristics of wastes. The goals also demonstrate the ongoing evolution of the alternative wasteway by demanding that the facilities plan be consistent with goals and priorities established through the solid waste comprehensive plan and other city plans. Because the solid waste comprehensive plan is a key agent in promoting consistently more ambitious goals, pegging the facilities plan to it ensures that the physical infrastructure supports the larger vision for waste diversion and reduction.⁵⁵⁵

The goals and the planning process help to constitute key aspects of Seattle's transformation, and support ongoing evolution of the waste system. But if these changes were only on paper, it would not be adequate to produce real results. In 2013, Seattle completed the renovation of the South Park transfer station, a \$75 million dollar project that rebuilt the site from the ground up. From the outside, you would be forgiven for mistaking the facility for an arts center or some other kind of creative or civic use. The sidewalk to the entrance is bordered by a wall with nooks displaying

⁵⁵⁴ Zimring, "Dirty Work"; Nagle, *Picking Up*.

⁵⁵⁵ City of Seattle, "Resolution 30431" (2001), <http://clerk.seattle.gov/~scripts/nph-brs.exe?s1=&s3=30431&s2=&s4=&Sect4=AND&l=200&Sect2=THESON&Sect3=PLURON&Sect5=RESNY&Sect6=HITOFF&d=RESF&p=1&u=%2F~public%2Fresny.htm&r=1&f=G>.

works of art created by Seattle-based artists from waste materials. The wall of the main entrance blazes green from decommissioned street signs.

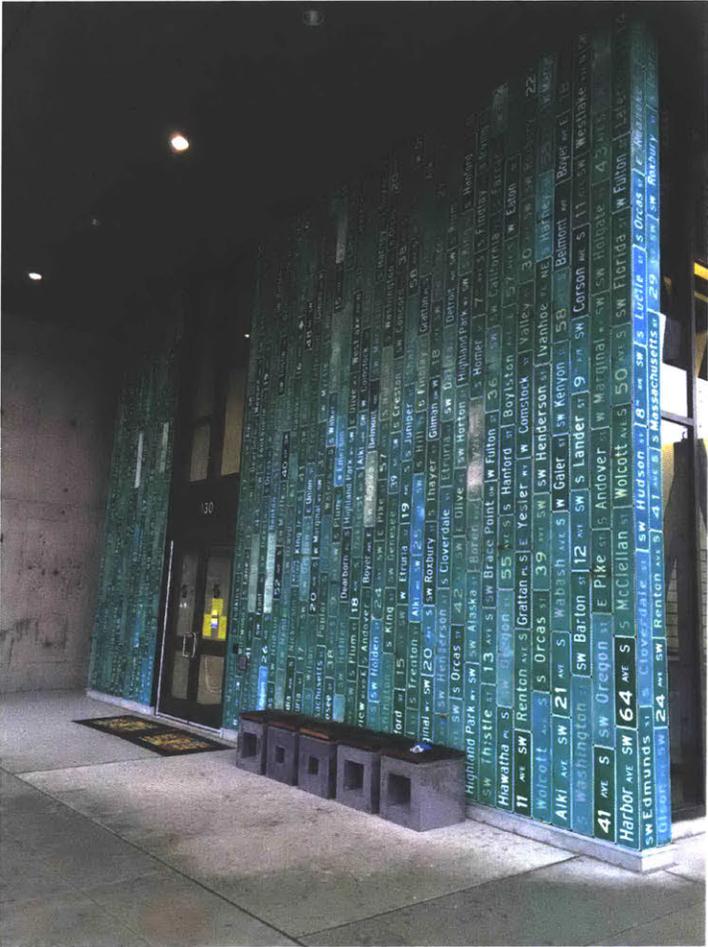


Figure 6.4. The main entrance of Seattle's South Transfer Station. The entry wall is made from decommissioned street signs. Photo by author, 2015

It is a public-facing facility, designed to make material separation easy and natural. Though it is more enclosed than its predecessor in order to control odor, it is also more transparent. The facility contains a viewing gallery where members of the public can enter, at any time, to watch the dumping and sorting on the facility floor. On the glass overlook onto the sorting floor, text bubbles provide visitors with basic statistics about waste collection in they city, and the amount and type of material that moves through the transfer station. The gallery contains a number of rotating exhibits

that diagram the city's waste system, explain the science of composting, and promote new waste diversion and prevention programs. In one exhibit, called "Rethink—trash or treasure," panels with photos of common waste materials open to reveal facts and alternatives. A photo of a disposable plastic water bottle, for instance, opens to reveal a photo of a baseball cap. The panel informs viewers that 2.5 million water bottles are tossed into the garbage every hour in the United States, and that just two water bottles contain enough raw material to generate all of the polyester fiber for a baseball hat.



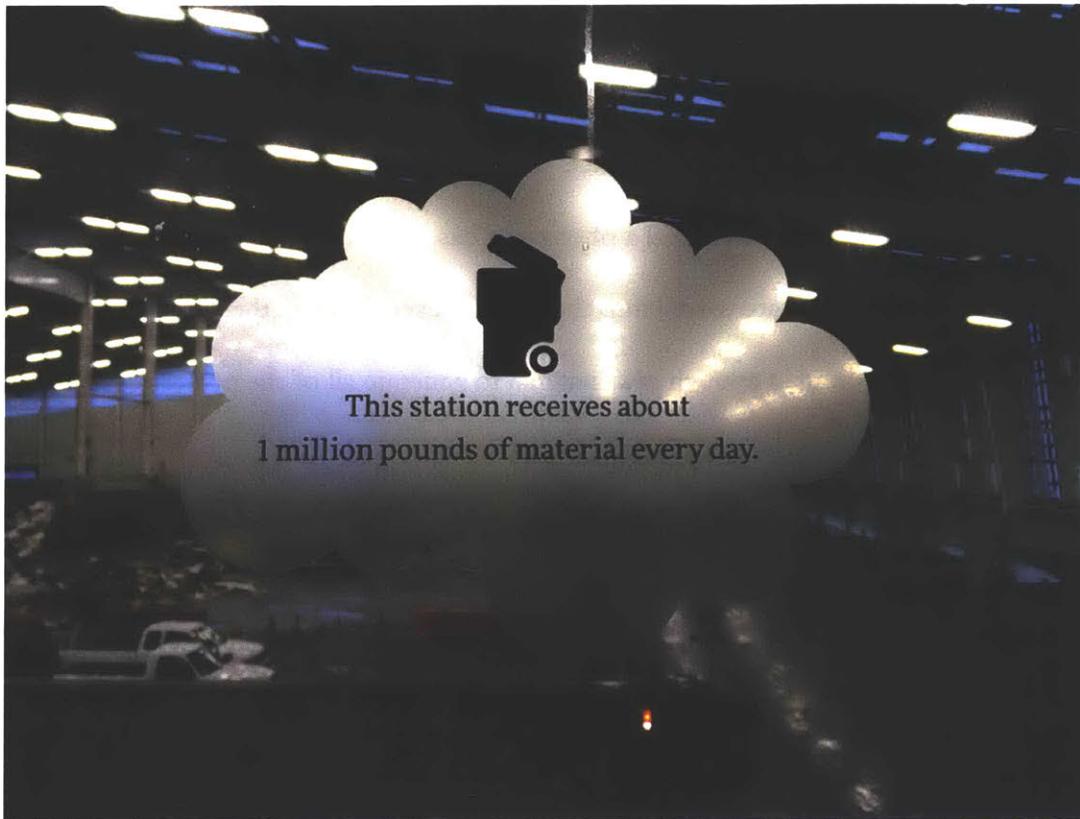


Figure 6.5. The transfer station includes an overlook onto the tipping floor; the glass wall has text bubbles with facts about the station and waste system. Photo by author, 2015.

The renovation of the second transfer station is projected to wrap up by the end of 2016.

Incorporating lessons from the resign and upgrade of the first, it promises to be equally, if not more, representative of the city's ambitions.

Failed experiments: discipline by the waste regime

Seattle's alternative wasteway has endured and reinforced itself over decades, supported by a political appetite for experimentation, through six mayors over ten administrations. The wasteway has yielded a number of successful programs and strategies, transformed the roles of citizen and the state, and fundamentally redefined the project of waste management in Seattle. Seattle's alternative wasteway, though, still operates within the Weak Recycling Waste Regime. When waste managers attempt something that is too radical, the system is disciplined by the actors and institutions that

maintain the larger regime.

One key example of regime discipline occurred when Seattle attempted to regulate the distribution of telephone books. The city created an opt-out program through which residents could choose not to receive a telephone book. Telephone book publishers that ignored opt-out requests were fined by the city to cover the costs of recycling the heavy and unwanted material. Within the first year of the program, 20% of Seattle's households and businesses signed up for the program, which resulted in a savings of 375 tons from the recycling stream.⁵⁵⁶ Yellow pages publishers reacted quickly. In 2014, they sued the city arguing that the program was infringing on their right to free speech. Tim Croll, recounted the episode:

District Court said this is a joke. City's fine. They are regulating commercial speech, not political speech. So then it goes up to the court of appeals, ninth circuit, very liberal place. The bane of the existence of the Republicans that want to break up the district because it's too liberal. Well, we get horrible luck in choosing judges. Two judges are on assignment from some other district, and they're like curmudgeons. And...the attorney on the other side was the guy who represented Bush in Bush vs Gore. They come out with an opinion that says "there's no difference between commercial speech and regular speech. Corporations are people." In the ninth circuit! Ah! So we lose. We had to pay them \$400,000 for court costs. And now we have a website that says, we'll take your name down and pass it on, but frankly whether [the telephone book distributors] pay attention to you or not is up to them.⁵⁵⁷

In this case, Seattle Public Utilities, working in partnership with City Councilor Mike O'Brien, attempted to push past waste diversion towards waste prevention. This move meant working upstream and influencing production and distribution of a particular good, rather than just addressing the "end-of-pipe" business of managing waste that has already been consumed and thrown away.

⁵⁵⁶ Mary Jean Spadafora, "Opt-out Program Results in Fewer Phone Books," *Seattle Times*, April 24, 2014.

⁵⁵⁷ Croll, Personal Interview.

In this case, the waste managers felt that the program could be an easy win because they were targeting a product that no one really wanted in the first place. But even so, within the context of a consumption-driven economy, this is a radical move, and the affected industry viewed the opt-out as an infringement. The book producers still make money from advertisers, and are prepared to fight for the right to produce and distribute, despite a lack of consumer demand for telephone books. The legal arguments underpinning the decision remain controversial, but the decision forced Seattle to retract its program and develop a weaker opt-out program that yellow-pages manufacturers have agreed to respect, though there is no enforcement mechanism.⁵⁵⁸

In addition to demonstrating what happens when Seattle's wasteway chafes too aggressively against the macro waste regime, the telephone book episode also illuminates two other key aspects of the successive wasteway. Experiments and pilot projects, while sometimes devised by Utility staff, are also often motivated by people outside of the Utility. The phonebook program was devised and promoted by City Councilmember Mike O'Brien, a former Sierra Club activist. From the Utility's point of view, Yellow Pages were not a big tonnage item. But it was important issue for Councilmember O'Brien, and the Utility supported it. Utility leadership viewed it as a productive partnership: "we scratched his back and he scratched ours. He supported our stuff."⁵⁵⁹ This ability to seize policy windows is not just opportunistic; it contributes to the overall momentum towards waste diversion and reduction because the Utility contextualizes moves like the phone books within a larger planning framework that includes higher priority items tonnage items. In the case of the

⁵⁵⁸ Emily Heffter, "City May Hang up on Phonebook Blitz - Ordinance Aims to Curtail Distribution," *Seattle Times*, June 23, 2010, Fourth edition; Spadafora, "Opt-out Program Results in Fewer Phone Books"; Seattle Public Utilities, "Stop Phone Books," *Seattle.gov*, accessed December 13, 2016, <http://www.seattle.gov/util/EnvironmentConservation/OurCity/ReduceReuse/StopPhoneBooks/index.htm>.

⁵⁵⁹ Croll, Personal Interview.

phone books, the Utility was subsequently also able to get O'Brien's support for an ordinance banning the Styrofoam take-away containers, another controversial provision that had been on the table for decades, but was finally passed by the City Council in 2008.⁵⁶⁰

A second feature of the wasteway that the telephone book program failure demonstrates is the system's ability to adapt to obstacles, and maintain a long view. In describing the failure of the program, Tim Croll suggested that ultimately it was "a minor setback. And that was maybe 1000 tons a year. But of course history and technology are driving these things out. You won't be able to find them in five years."⁵⁶¹ Rather than getting stuck on the politics of the issue, the Utility strategically turned its attention to other materials likely to have a longer, and perhaps more harmful imprint on the waste stream, such as e-waste.

A second key failure occurred in 2010, as the Utility recognized that it was becoming increasingly difficult to shave down the tonnage going to the landfill. As a new technique, they piloted a program of biweekly garbage pickup. The concept was that it would further incentivize food scrap composting if the compost was collected more frequently than garbage.⁵⁶² The pilot was ultimately unsuccessful; residents were dissatisfied and public officials ultimately decided that the cost and tonnage savings did not justify taking the pilot city-wide. This test illuminates another important feature of Seattle's wasteway. In the case of the telephone books, the Utility was forced to scale back a program because of a legal challenge based on grounds unrelated to waste management. But

⁵⁶⁰ Jon Savelle, "Debate over Styrofoam Won't Fade Away," *Seattle Times*, February 12, 1991, Final edition; Sharon Pian Chan, "Fee and Ban? It's Time to Talk," *Seattle Times*, July 8, 2008, Fourth edition; Noelene Clark, "Council Panel OKs Bag Fees - Foam-Container Ban Also Approved," *Seattle Times*, July 23, 2008, Fourth edition; Seattle Public Utilities, "Food Package Requirements," *Seattle.gov*, accessed December 13, 2016, <http://www.seattle.gov/util/forbusinesses/solidwaste/foodyardbusinesses/commercial/foodpackagingrequirements/>.

⁵⁶¹ Croll, Personal Interview.

⁵⁶² Keith Ervin, "Seattle Considers Switch to Biweekly Garbage Pickup," *Seattle Times*, August 13, 2010, Fourth edition; Lynn Thompson, "In Seattle, Garbage Pick-up Just Twice a Month?," *Seattle Times*, April 2, 2012.

in the case of the bi-weekly garbage pick up, the failure rested primarily on customer dissatisfaction. The Utility acknowledged prior to the start of the pilot that “There's no way to predict our own customers' subscription behavior... It's not clear-cut. There's savings, but is there enough savings to make it worthwhile?”⁵⁶³

Throughout the pilot the Utility kept in close touch with the 800 included families; they communicated with families prior to the pilot, and then used a variety of techniques to gather feedback about their experience with the program. More than a third of participants ultimately recommended against expanding the program city-wide, and a newly elected Mayor shelved the program.⁵⁶⁴ This willingness to experiment when the outcome is unknown, and the institutional capacity for feedback, communication and monitoring were all key factors in the transformation described in Chapter 4. These factors also constitute key elements of the alternative wasteway. Immediately, even while discussing the failure of the biweekly garbage collection program, Tim Croll, was already planning for other experiments, such as curbside recycling of construction debris.⁵⁶⁵ And, while the Mayor may not have been ready to take on the political challenge so early in his tenure, the *Seattle Times*, a local paper that had not always been on the side of experimentation, published an editorial arguing that it was worth working out the kinks of biweekly collection—increased contamination in recycling, anxiety about rodents, customers with special circumstances—to help the city meet its ultimate goal of 70% waste diversion.⁵⁶⁶ This editorial indicates a degree of buy-in with the larger system goals, even as the path forward gets steeper. This is a significant factor in withstanding experimentation and failure. Also, it should be noted, that

⁵⁶³ Thompson, “In Seattle, Garbage Pick-up Just Twice a Month?”

⁵⁶⁴ Lynn Thompson, “Mayor Curbs Plan to Collect Garbage Every Other Week,” *Seattle Times*, February 22, 2014.

⁵⁶⁵ Ibid.

⁵⁶⁶ Editorial, “Less Frequent Garbage Pickup Needs Sorting Out,” *Seattle Times*, December 27, 2013.

things that seem impossible one year—like mandatory recycling in 1988—can quickly become viable with the passage of time.

A third key failure, after the phonebook opt-out program, followed the city’s adoption of mandatory food scrap composting. As noted above, Seattle instituted mandatory food composting in 2015, after a period of voluntary food scrap separation. In 2014, Utility leaders convinced the Mayor and City Council that mandatory food scrap composting was the best option for meeting the 2015 60% diversion rate goal.⁵⁶⁷ Elected officials agreed, and through a new composting Ordinance, required that residents put food scraps in with their yard waste. The Utility planned a series of warnings and fines for residents to be implemented after a grace period. As noted above, there was very little protest when the new law was enacted; for the most part residents in single family homes had already been separating food scraps. But there was still a lot of food in the garbage going to the landfill, and the Utility wanted to improve composting participation across the city.

The Utility attempted to boost participation by randomly examining the garbage in people’s bins; they would first issue warnings, and then ultimately small fines for residents that continued to dump food scraps in the garbage. The warnings consisted of pink flyers affixed to bins that read “Its not garbage anymore,” and a reminder of the new rules (see figure 6.5).

⁵⁶⁷ Cassandra Profita, “Seattle Considers Fining Residents For Failing To Compost,” *Oregon Public Broadcasting*, February 18, 2015, sec. Environment, <http://www.opb.org/news/article/seattle-considers-fines-to-enforce-curbside-compos/>; Vanessa Ho and Seattlepi.com, “New Seattle Law: No Food in Trash,” *Seattle Post-Intelligencer*, December 31, 2014, <http://www.seattlepi.com/local/article/New-Seattle-law-No-more-food-in-trash-5983805.php>.



Figure 6.6. *Warning from the solid waste utility for failing to separate food scraps from the garbage. Source: Maple Leaf Life, a Seattle neighborhood news blog (<http://www.mapleleaflife.com/2015/01/06/second-week-of-policed-garbage-pickup/>)*

The messaging was directly working to continue the process of redefinition that started decades earlier with yard waste and recyclables. Food scraps are not trash, but a valuable resource that can restore nutrients to soils rather than release methane in a landfill. While most Seattlites were sanguine about the policy change, some Seattlites reacted when the city began enforcement. A group of eight residents enlisted the help of the Pacific Legal Foundation (PLF), a non-profit organization whose mission is to protect “private property rights, individual liberty, free enterprise, limited government, and a balanced approach to environmental protection.”⁵⁶⁸ The PLF sued the city, arguing that it was unconstitutional in Washington State to snoop through residents’ garbage.

The core issue was privacy. As one of the residents who promoted the law suit told one local paper: “The city has no right to know what I eat and drink. You can get all this information about people from their garbage.”⁵⁶⁹ This framing of garbage—that it is personal, private, and taboo—reflects

⁵⁶⁸ Pacific Legal Foundation, “About the Pacific Legal Foundation,” *Pacific Legal Foundation*, accessed November 9, 2016, <http://www.pacificlegal.org/about>.

⁵⁶⁹ Erik Lacitis, “Judge: Seattle Trash-Check Ordinance ‘unconstitutional,’” *The Seattle Times*, April 27, 2016, <http://www.seattletimes.com/seattle-news/politics/judge-seattle-trash-check-ordinance-unconstitutional/>.

Sanitary City framings of garbage as dirty, suitable only for rapid and efficient removal. It is a key precept that supports the current Weak Recycling Waste Regime, which depends on invisible wastes that don't remind consumers of the negative consequences of even-increasing consumption, from resource extraction and manufacturing, through waste disposal. The efficient collection and removal of waste upholds this ideal by ensuring that people have very little contact with their own waste or others' wastes once it leaves the home. And even when waste is present, most people have developed an ability to "unsee" both waste and waste workers in order to protect the boundary between waste and non-waste.⁵⁷⁰ In Seattle, the monitoring of garbage for contamination from food scraps upended this tradition. For some, it was simply too much of an intrusion.

The city defended its policy, arguing that waste haulers were doing cursory and random visual inspections, not unlike what they did for recycling; they were not systematically pawing through garbage, gathering secrets, and meting out fines. But the judge ultimately determined that the city had failed to describe how it could possibly identify compostable food scraps in the trash without thorough inspection. The city was, in the words of the attorney from the PLF, "overstepping the line;"⁵⁷¹ it was crossing not only a material limit on state power enshrined in Washington State's constitution, but symbolically crossing between the realms of waste and not waste and thus threatening the stability of the macro waste regime.

In this case, it was an ideologically-driven non-profit, residents upholding deeply held social values, and a supportive judiciary that disciplined Seattle's wasteway. News outlets around the country

⁵⁷⁰ Nagle, *Picking Up*.

⁵⁷¹ Sara Bernard, "Seattle's Food Waste Law Is Working, and It's Not Because of the Garbage Snooping," *Seattle Weekly*, April 29, 2016.

including the the *New York Times* and Fox News picked up on this story.⁵⁷² The widespread interest in the case highlights the powerfully held values and ideologies buried in our trash cans and also indicates the ways that the waste regime can not only discipline Seattle, but also reinforce broadly held values and work to narrow the alternatives for other cities considering similar programs.

Even though the decision forced Seattle waste managers to evaluate enforcement strategies, the Utility responded with the characteristic aplomb of the successive wasteway. The Utility released a statement expressing pleasure that “the court’s ruling recognizes the City’s ability to regulate what goes into trash cans to address conservation and safety needs. ‘Plain view’ monitoring for dangerous items is vital to protecting worker and public safety... We will study the ruling and determine what changes we need to make in the program and the City ordinance.”⁵⁷³ The city’s next steps are not yet clear. This is just the latest in a series of moves and setbacks, and the Utility shows no signs of slowing.

Discipline to the waste system comes from industry, from political and legal apparatuses that support industry, and from residents themselves whose expectations are still shaped by deeply held constructs of order, privacy, convenience, and cleanliness. As Mary Douglas has shown, these constructs are fundamental to people’s understandings of themselves in the world, and the maintenance of order and cleanliness in particular are sacred values. She also points out, however, that while they may appear to be timeless and absolute “...there is every reason to believe [that these ideas] are sensitive to change. The same impulse to impose order which brings them into

⁵⁷² Kirk Johnson, “Residents Sue Seattle, Saying New Trash Rules Violate Privacy,” *The New York Times*, July 17, 2015, <http://www.nytimes.com/2015/07/18/us/residents-sue-seattle-saying-new-trash-rules-violate-privacy.html>; Dan Springer, “Seattle Sued over Recycling Inspectors Keeping Tabs on Residents’ Trash,” *FoxNews.com*, September 14, 2015, sec. Politics, <http://www.foxnews.com/politics/2015/09/14/trash-talk-seattle-war-on-waste.html>.

⁵⁷³ Quoted in: Bernard, “Seattle’s Food Waste Law Is Working, and It’s Not Because of the Garbage Snooping.”

existence can be supposed to be continually modifying or enriching them.”⁵⁷⁴ And this has certainly been the case in Seattle; where mandatory recycling was once viewed as invasive and impolitic, it was eventually easily accepted by residents and politicians. Where separating organic waste is generally viewed as a nuisance, and even gross, many Seattlites do it habitually, and feel unease in places that do not offer a curbside composting service, even while some have pushed back against enforcement of the law.

Seattle’s alternative wasteway is constantly cultivated by actors within and outside of elected office who are willing to experiment, test, reset, and try again. Any of the above failures could have crippled a system that was not so institutionally reinforced. Ambitious goals, a framework for regular monitoring and a shared belief among managers, policy-makers, and stakeholders in the value of the endeavor of waste reduction has fueled ever evolving waste management practice that is incrementally, but systematically, reducing reliance on garbage disposal in Seattle.

Conclusion

Following continued evolution in Boston’s and Seattle’s waste systems after their crises in the 1980s highlights the significant changes in the city’s wasteways. While Boston has hewed closely to the weak recycling waste regime by maintaining a system that upholds sanitary city logics while providing the minimum recycling service, Seattle set a path of transformation and resistance, that has endured, even as it has been disciplined.

The key shifts in Seattle were institutional: the broadening of expertise among waste managers, and the capacity built for inclusive planning, outreach, and community feedback and education. Once

⁵⁷⁴ Douglas, *Purity and Danger: An Analysis of the Concepts of Pollution and Taboo*, 5.

waste managers were no longer simply disposal experts, emphasis of the waste Utility broadened. Not only were public voices critical to the significant redefinitions that took place, but dialogue has continued to be a key element that predicts the success of Seattle's programs. Significantly, as the cases of composting enforcement and bi-weekly garbage pick-up showed, the Utility remains open to negative feedback, and is prepared to continue to work and experiment until they develop a better idea, or simply wait until residents come around to accept older ideas. These are ultimately the core elements of the alternative wasteway: experimentation, learning from failures, and patience to see through long-arc social change. These characteristics are not generally compatible with local electoral politics. In Seattle, formal goals and regular public planning efforts have ensured that the public and the city's elected leadership have continued to buy in to the general direction, even when they have objected to individual programs.

It is key to recognize that while the waste industry is itself a powerful actor that has had some influence over key waste management decisions in Boston, many of the same firms also work in Seattle. The multi-national corporate firm Waste Management owns the landfill that receives Seattle's garbage, and provides trash hauling service to the city; a subsidiary of the same firm owns the Saugus incinerator that receives the bulk of Boston's garbage. This is key to acknowledge because it indicates that the waste industry need not be an additional hindrance to waste system change. In Seattle, discipline has come from residents, ideologically driven activists, and product manufacturers and suppliers; despite the power of the waste industry in some places, discipline has not come from the waste industry itself in Seattle. Wasteways, thus, are more powerful than the waste industry. With strong municipal leadership, the waste industry, despite its investment in disposal infrastructure can be a partner in transformed practices.

CHAPTER 7

Limits and Promise of the Alternative Wasteway: Towards a New Understanding of Sustainability

Introduction

In a famous scene from the 1989 film *Sex, Lies, and Videotape*, Andie MacDowell's character tells her therapist that she just can't stop thinking about garbage. She imagines a garbage can that "just keeps producing garbage, and it just keeps overflowing." She asks, "what would you even do to stop something like that?" The question, in the film a metaphorical rumination on getting out of a damaging relationship, might as well be the research question for this dissertation, and for that matter, all investigations of socio-technical change in the face of climate disruption.

During the 1980s, garbage ranked higher on the list of municipal worries than it had since the sanitary city movement a century earlier. A confluence of landfill closures, the emergence of new waste-to-energy incineration technologies, the dominance of neo-liberal politics promoting private sector investment in public infrastructure and services, and the tail end of the environmental movement that had resulted in stronger federal environmental regulations than had ever previously existed, put garbage front and center in practical and conceptual discourses. And, in many cities, a very real reduction in landfill capacity shoved garbage to the top of urban agendas, opening up possibilities for public discourse about a problem that had long been considered solved.

In the late 1970s and early 1980s, Seattle and Boston both experienced declines in regional landfill capacity. Waste managers and elected officials in both cities gravitated towards space-efficient waste-to-energy incinerators as the answer. But, in both cities, proposals for local incinerators failed. In the planning processes that unfolded around the incinerator proposals, each city established a trajectory—or a wasteway—for waste management that would shape decisions and

actions for decades to come. In Seattle, due to an open public discourse driven by formal, inclusive planning and an engaged citizenry, regional infrastructure politics, and escalating costs, the problem of waste was entirely transformed. Waste was redefined temporally, materially, and spatially. It was given form and a new meaning, and in so doing, it shifted from a nebulous “bad” to a stream of potential resources that required attention and careful stewardship. In this process, the roles of the citizen and the state were also transformed: Seattle residents and businesses became active waste managers with increased responsibility not only for paying for what they wasted, but also for managing increasingly demanding processes of waste separation. The city government was recast in the role of a citizen: one stakeholder among many, with the same responsibilities for careful consumption.

Over ensuing decades, these dramatic changes resulted in what I have called an alternative wasteway. The alternative wasteway slowly moves in opposition to the dominant Weak Recycling Waste Regime, chipping away at the disposal paradigm that has dominated production, consumption, and waste management since the 19th century. While many of the changes in Seattle have been incremental, the intention is radical, and the result is a system that looks and functions very differently than waste systems, like Boston’s, that mirror that waste regime more faithfully.

In Boston, the incinerator proposal was also rejected. But rather than a decision that resulted from public discourse and careful planning, the decision was largely the result of a power struggle between city and state elected officials, and the dominance of a narrow set of interests and expertise at the helm of planning and decision-making. The result in Boston has been a mainstream wasteway, that operates well within the bounds of the Weak Recycling Waste Regime. Given a lack of resources for planning and experimentation, no public process to speak of, and a continued

emphasis on traditional waste management expertise, the city has failed even to meet the national recycling average. Pilot projects in more progressive waste management have been minimal and disappointing, and community activists have found no leverage for promoting meaningful system change.

The Limits of Seattle's Transformation

In Gregory Unruh's terminology, the waste system change in Seattle may be thought of as "continuous," rather than radical, discontinuous shifts that replace technologies and the associated processes and networks in one fell swoop. In Unruh's assessment, this is a moderate approach to breaking technological or infrastructural lock-in, and in fact may not be effective.⁵⁷⁵ But continuous, incremental change has been a hallmark of Seattle's alternative wasteway. New programs and processes used existing infrastructure, trying to nudge outcomes in a new direction rather than starting from scratch. When the city added recycling, it used a similar system of trucks on the same roadway networks that supported waste collection, and built on the existing network of recyclers that in the city. When the city began food scrap composting, it had residents lump food waste in with yard waste, using the same residential carts, and the same trucks for collection. It started all its new programs first with pilots, and then with voluntary participation, and only after the kinks had been worked out, moved to enforced, mandatory practices.

Through this process of continuous change, Seattle has made significant progress in institutional and programmatic terms. But the fact remains that city still sends a mile-long, double-stacked freight train full of garbage to a landfill in Eastern Oregon every day. Waste managers in the city

⁵⁷⁵ Gregory C. Unruh, "Escaping Carbon Lock-In," *Energy Policy* 30, no. 4 (March 2002): 317–25, doi:10.1016/S0301-4215(01)00098-2.

are well aware that their programs have yet to truly tackle the dominant paradigm of consumption and disposability. While the city has made measurable steps in waste reduction, and the city's recycling rate is impressive—all the more so because it includes the commercial sector, which most cities do not even measure—it is still overwhelmingly dependent on end-of-pipe waste management techniques.

Further, while residents of single family homes, which generate 30% of the city's waste stream, have achieved a 70% recycling rate. But the city has not managed to achieve the same level of participation in multi-family buildings. The multi-family sector, which generates 10% of the city's waste stream, has only managed to get to a 37% recycling rate.⁵⁷⁶ The divide between single- and multi-family comes from technical issues. Enforcement is less easy when wastes from multiple households are comingled. Also, residents in apartment often have less space for separating and storing multiple waste streams.⁵⁷⁷

The divide between single-family and commercial sectors is less stark, but more consequential. The commercial sectors has reported a slight decrease in waste generation, but only very marginal increases in recycling. Given that commercial waste represents 48% of the city's municipal waste stream, improving performance is still a huge challenge for the Utility.

Despite this uneven performance, Seattle still recycles and composts at rates far ahead of most American cities. But recycling alone is not necessarily a signal of sustainability. Many scholars have

⁵⁷⁶ Seattle Public Utilities, "Picking up the Pace to Zero Waste: Seattle's Solid Waste Plan, 2011 Revision."

⁵⁷⁷ The divide between single- and multi-family residences does not map neatly onto demographics in Seattle, as many of the city's high rise buildings are also among its most expensive real estate. Also, as Tim Croll noted during his interview, supported by recent city surveys, environmental concern in Seattle is widespread. Residents of color, and low income residents report the same levels of support for city environmental programs as the traditional conservation demographic of middle-class whites.

pointed out key strategic failures of recycling, which were address in detail in Chapter 3: it encourages consumption by easing the consciences of consumers; it addresses waste only at one, and the smallest, segment in the whole system of waste-making from resource extraction to municipal waste disposal; it requires huge amounts of energy, and material qualities tend to be degraded rather than preserved; it has been used by industry to displace the responsibility for environmental action onto individuals and deflect attention from the corporate and structural supports that determine consumption and waste making; municipal programs emphasize materials for which recycling provides minimal environmental benefit, and ignores other materials which recycling could be a more profitable—environmentally and financially—venture; and more.⁵⁷⁸ In light of these critiques, Seattle’s success may still be notable, but it could be argued that it hardly represents a solution to the socio-environmental crises we face.

The limits of Seattle’s progress are even more stark when put into the context of the rest of the country: only a handful of cities even come close to achieving similar rates of reduction and diversion, and even fewer have launched the whole scale redefinition of solid waste management that Seattle has. Seattle serves as a model in the U.S., and cities from around the country and the world frequently visit and send inquiries about Seattle’s program. In response, the city’s most recent solid waste plan update was structured to serve as a “resource document” as much as a guiding plan for the city.⁵⁷⁹ However, the information exchange is almost exclusively about Seattle’s programs; according to Tim Croll, the current solid waste head, the response is often, “wow, you’re really doing that. Is that true? Oh, I don’t think we could ever do that.”⁵⁸⁰ This programmatic approach

⁵⁷⁸ Liboiron, “Solutions to Waste and the Problem of Scalar Mismatches”; Liboiron, “Against Awareness, For Scale”; MacBride, *Recycling Reconsidered: The Present Failure and Future Promise of Environmental Action in the United States*; Luke, *Ecocritique*; Gould, Schnaiberg, and Weinberg, *Local Environmental Struggles: Citizen Activism in the Treadmill of Production*.

⁵⁷⁹ Seattle Public Utilities, “Picking up the Pace to Zero Waste: Seattle’s Solid Waste Plan, 2011 Revision,” 1.3.

⁵⁸⁰ Croll, Personal Interview.

may fundamentally miss the point about Seattle: it is not any individual program that yields their 60% diversion rate or their per capita source reduction. It is the multiple institutions of the alternative wasteway, as they have matured over time. Cities that simply try to replicate Seattle's recycling program will likely get nowhere.

There are still many people living in the U.S. without easy access to any kind of recycling. And, mainstream economics and popular priorities, made all the more apparent in the recent election and the incoming Presidential cabinet, still align all possible resources towards traditional models of growth based on resource extraction and manufacturing powered by fossil fuel and labor exploitation. Are the successes of Seattle—however circumscribed they may be by the numbers—at all transferable beyond the rarified zone of the emerald city?

The Promise: Sustainability as Resistance

Despite the clear limits of Seattle's progress, the case provides important insights into the factors that allow socio-technical change within strong regimes, as well as indications that action at the local scale can in fact ripple outwards through systems that are much larger than the city. In terms of key lessons, the most important finding here is not about waste diversion rates, but about the shifts in Seattle's system that took place in the 1980s, and the nature of the alternative wasteway. Returning now to the question posed in Chapter 1, let us examine what the alternative wasteway tells about sustainability generally.

Chapter 2 explored recent movements to establish sustainable waste management—Integrated Solid Waste Management (ISWM), Sustainable Materials Management (SMM), and Zero Waste (ZW). Each of these movements is centrally concerned with reducing material throughput in the

broader flow of extraction, production, consumption, and waste-making. ISWM, the more conservative option, suggests prioritizing reduction and recycling over energy recovery and landfilling. In practice, this has encouraged the development of municipal recycling programs, but, as many critics have pointed out, it has not had effectively increased waste reduction efforts, and the resulting recycling programs have ambiguous environmental and economic impacts.⁵⁸¹

SMM and ZW, movements that originated in environmental and activist circles rather than in waste engineering circles, recognize the shortcomings of ISWM in practice and attempt to reframe waste management away from strictly end-of-pipe solutions. In SMM, the emphasis remains on reduced material throughput, reduced disposal, and reduced greenhouse gas emissions throughout material lifecycles.⁵⁸² ZW professes to be a radical rethink of material practice and consumption, but in real life has proved to be as appropriable for greenwashing as all the movements that have come before.

In any case, sustainability is, in theory, more than the limited environmental metrics established by these movements. The concepts of “sustainability” or “sustainable development” suggest alternate patterns of resource use whether it be through minor tweaks to existing economic relations, or a revolution. In either case, sustainability speaks to change on multiple levels: “institutional and policy and individual choice”⁵⁸³ as well as in the physical infrastructures that determine so much about everyone’s daily life.⁵⁸⁴

⁵⁸¹ MacBride, *Recycling Reconsidered: The Present Failure and Future Promise of Environmental Action in the United States*; Luke, *Ecocritique*; Weinberg, Pellow, and Schnaiberg, *Urban Recycling and the Search for Sustainable Community Development*; Liboiron, “Solutions to Waste and the Problem of Scalar Mismatches.”

⁵⁸² Connett, *The Zero Waste Solution*; EPA, “Advancing Sustainable Materials Management: Facts and Figures 2013.”

⁵⁸³ Melissa Checker, Gary McDonogh, and Cindy Isenhour, *Sustainability in the Global City: Myth and Practice* (New York: Cambridge University Press, 2015), 11.

⁵⁸⁴ Bas van Vliet, “Infrastructure,” in *Green Cities: An A-to-Z Guide*, ed. Nevin Cohen and Paul Robbins (Thousand Oaks: SAGE, 2011).

By bringing together the assessment the of Seattle and Boston's wasteways, with the sustainability discourse, a new possibility for understanding sustainability emerges. Though both cities operate within the weak recycling waste regime that is shaped by an economy of consumption and disposability, Seattle has demonstrated a remarkable capacity for socio-technical evolution in different direction. Boston, on the other hand, operates within the parameters that one would expect, given the regime. In Boston, waste managers are so deeply embedded in the waste regime, and activists so functionally distant from waste policy-making and management that the system needs no discipline. It progresses in the manner of systems within strong socio-technical regimes, advancing only along pathways established by industry actors, and only in ways that strengthen the interests that industry actors already have in the system.

The mainstream and alternative wasteways demonstrated in Boston and Seattle provide two models for how municipal systems relate to the macro-regime of a disposal-oriented, consumption-driven economy. Each municipal waste system in the U.S. is unique; the histories, actors, built environments, regional infrastructural geographies, even the contents of the trash itself, differ from city to city. But on basic statistics, Boston is quite similar to cities around the country. It offers basic recycling, and even though the city has been developing increasing sophisticated sustainability plans, solid waste continues to be technocratically operated on a minimal budget, outside of substantive visions for things like greenhouse gas reduction, resilience, or resource use. Seattle is anomalous. Its radical transformation in the 1980s set the stage for a new wasteway, that positions the city in opposition to the weak recycling waste regime.

Understanding the evolutions in each city as a coherent wasteway allows us to examine the relationship between the city's waste management and the waste regime in which it operates, and

thus allows us to evaluate the degree to which shifts in policy and practice constitute the limited, incremental change of a socio-technical regime or transformation, however slow. It also allows us to challenge implicit and explicit notions of sustainability as they are enacted in Seattle and Boston and as they are defined in the literature.

Seattle's waste system is widely considered to be among the most "sustainable" in the country. If we step back from the typical assessments about diversion rates and instead look at what differentiates Seattle's wasteway from Boston's, the key factors relate to its ability to withstand discipline from the waste regime and its continued effort to make radical changes, even when outcomes may take more than one electoral cycle to show results. In other words, it is the way the city has developed alternative system goals and then built a variety of institutions to support and insulate them from the waste regime that is significant. Rather than an outcome-based measure, Seattle suggests that sustainability might better be understood in practice as a *process* through which systems or organizations *resist* the forces that reinforce practices and behaviors that we know to be *unsustainable*. Sustainability is resistance.

Within this framework, it is possible to see the impacts of Seattle's alternative wasteway in richer and nuanced terms. The institutional changes—including setting legally adopted goals, broad expertise in the waste system, inclusion of citizen voices at all points in planning and practice—are lessons that can be transmitted to other cities seeking to engage alternatively with the weak recycling waste regime. There is some evidence that this is happening. A recent survey of large U.S. cities indicated that 34% have a formally adopted diversion goal, and 12% have a formally adopted

waste reduction goal.⁵⁸⁵ This is just the first step, but establishing the goals is a key step in building institutional support for alternative practice.

In addition to the institutional changes that provide key lessons for other municipalities, there is also evidence that Seattle's work, and similar work in other cities, is starting to have an effect beyond its borders. In the mobilizing of private sector campaigns like the "bag the ban" movement to block plastic bag bans⁵⁸⁶ and waste industry appropriation of the materials management language, we can see clear anxiety that the incremental progress in a small, but growing, number of a few cities has potentially dramatic consequences for the industries that rely most directly on cheap disposal and disposability.

At the same time, other industries have begun to take on the challenge of disposability head on. Large corporate conglomerates, like Nestle, have begun to consider life-cycle assessments as a tool to reduce the environmental impacts of their products, and a key focus of their sustainability initiative is reduced packaging.⁵⁸⁷ Small entrepreneurs have started businesses like "Buy me Once" that either provide or direct consumers to products with lifetime guarantees, bucking the trend of disposability and creating social value around the idea of quality over quantity. While globally disruptive startups like Airbnb and Uber have brought the "sharing economy" into the mainstream discourse (regardless of whether these services can really be understood as true sharing of

⁵⁸⁵ Ben-Joseph et al., "Solid Waste Management and Sustainable Consumption: A Survey about Municipal Practices in the U.S."

⁵⁸⁶ Novolex, "Bag the Ban," *Bag the Ban*, accessed December 17, 2016, <http://www.bagtheban.com/>; Adam Sternbergh, "The Ban on Plastic Bags vs. the Ban on Bag Bans," *New York Magazine*, July 15, 2015, <http://nymag.com/daily/intelligencer/2015/07/plastic-bag-bans.html>.

⁵⁸⁷ Nestlé, "Product Life Cycle," *Http://Www.nestle.com*, accessed December 17, 2016, <http://www.nestle.com/csv/environmental-sustainability/product-life-cycle>; Nestlé, "Nestlé's Life Cycle Approach: Environmental Sustainability," *Http://Www.nestle.com*, accessed December 17, 2016, <http://www.nestle.com/media/newsandfeatures/nestles-life-cycle-approach-environmental-sustainability>; Pat Reynolds, "Nestlé in the U.S.—strategically Consumer-Centric | Packaging World," *Packaging World*, December 2, 2016, <http://www.packworld.com/sustainability/supply-chain/nestle-us-strategically-consumer-centric>.

resources), community organizations across the world are receiving increasing attention from scholars and policy-makers for networks and institutions to share tools, food, childcare, skills, and much more outside of the monetized economy. All of these movements are connected by the premise that not everything needs to be individually wrapped and individually owned; that material things are precious, rather than disposable; that we are, either in our own homes with our own hands, or with the help of our community, capable of supplying at least some of the goods and services we have grown accustomed to purchasing. Encapsulated in movements like plenitude and degrowth,⁵⁸⁸ these movements suggest a pathway towards unleashing ourselves from our dependence on industrialized, global networks that supply cheap stuff with contrails of environmental damage. But unlike many DIY contemporary sustainability movements, the alternative wasteway, and a collective sense of sustainability as resistance, offers a clear pathway for municipal governments, which are responsible for so much critical infrastructure to play a key role in global sustainability.

Considering sustainability as a process of resistance allows us to understand failures or setbacks as continued evidence of incremental progress; it shifts the emphasis from outcomes to strong institutions that can see change through the long game. Many have argued that sustainability has long been stuck in a reductionist “greenprint” model that dictates values and promotes limited recipes of technologies and best practices. This model avoids politics; it avoids the multiple and complex ways that regimes are entrenched and maintained.⁵⁸⁹ Environmental sociologists Melanie Dupuis and Tamara Ball argue that it is the “how” not the “what” of sustainability that requires

⁵⁸⁸ Schor, *Plenitude: The New Economics of True Wealth*; Giacomo D’Alisa, Federico Demaria, and Giorgos Kallis, eds., *Degrowth: A Vocabulary for a New Era* (New York and London: Routledge, 2015).

⁵⁸⁹ Harriet Bulkeley, “Urban Sustainability: Learning from Best Practice?,” *Environment and Planning A* 38, no. 6 (June 1, 2006): 1029–44, doi:10.1068/a37300; E. Melanie DuPuis and Tamara Ball, “How Not What: Teaching Sustainability as Process,” *Sustainability: Science, Practice, & Policy* 9, no. 1 (Winter 2013), <http://search.proquest.com/docview/1430266149/abstract/8A4CAEB15D3240FDPQ/1>.

critical engagement starting in the university classroom; to do this means shifting the valuable knowledge away from lists of best practices towards reflexive engagement.⁵⁹⁰

Understanding sustainability as a process of resistance in the waste sphere encourages planners and managers to shift from limited metrics entrenched in the discipline—diversion rates in particular—and instead to use those metrics as anchoring points along an adaptive and experimental process that both promotes learning among stakeholders and among system managers. In Seattle, residents' engagement with their wastes have changed substantially since the 1980s. Waste managers have likewise learned and adapted as they discover both the limits of what they can ask of stakeholders, and the spaces in which innovation is possible. Sustainability as resistance recognizes that values can change over time, while still maintaining a fundamental orientation that opposes damaging regimes. It allows for new problems and new knowledge to emerge from the process itself, instead of imposing externally-devised, one-size-fits-all solutions.

Future Research and the Significance for Planning

The fundamental issues raised in this dissertation offer several distinct directions for future research. First, the wasteway theory that emerges from the comparison of Seattle and Boston needs to be further tested; given the diversity of waste systems and management histories in U.S., I hypothesize that Boston and Seattle represent poles along a spectrum. Cities like Austin and Minneapolis may exhibit many of the same characteristics as Seattle, but have not been as successful at implementing novel programs; meanwhile, cities like New York and Chicago have tried and yet so far largely failed to tackle waste management through a variety of programs and politically motivated policies, making them more active than Boston, but not as committed as

⁵⁹⁰ DuPuis and Ball, "How Not What."

Seattle. In short, to develop the theory further will require the investigation of a number of additional cases.

Second, the alternative wasteway is, in essence, an argument for the transformative power of incrementalism. This work suggests but ultimately does not demonstrate the ability of municipal waste management to influence systems larger than the city. While Seattle is measurably different in both process and outcome than Boston, whether it can be understood as deeply transformative is still an open question. Some discrete research projects could start to test this. For example, research on the industry campaigns to stall or undermine municipal resource management policies would give us a better sense for concerns of industry and the degree of influence of the policies in question. Second, more research in to the policy transfer occurring among cities would help to us to see whether Seattle remains a symbolic leader only, or if it the many cities that consult Seattle for waste management advice are incorporating the fundamental institutional changes along with the specific programs.

The issue of transformation is big, and it requires substantial work: can cities use waste management to alter global infrastructures of consumption? If so, how does this work? In support of this larger question, I suggest that much more work needs to be done to understand the networks for informal exchange and resource sharing happening in urban areas, as well investigations into the ways that urban policy supports or hinders these activities. In addition, this dissertation has not looked at all into two issues that play a key role, but are generally not central to waste studies in wealthy settings: informal waste management and the role of waste workers. Both require more investigation in U.S. waste systems, if the goal is to understand how waste systems can play a substantial and transformative role in urban sustainability.

Finally, I call for planners to reconsider their engagement with the environment. Planners, particularly those working in the U.S. have prioritized a handful of environmental questions, like open space preservation, energy and transportation, and climate change adaptation and resilience currently. In terms of these questions, most planners beyond the most radical, have resisted questioning growth regimes, and tie their inquiries to continued development. These are all critical questions, but there are many others that have received comparatively little attention, despite the scale and urgency of the issues.

The urban footprint of global resource flows demands planners' integrative skill sets but so far, has been almost entirely left out of planning discourse. What is at stake cannot be overstated.

Consumption and waste inscribe territory that the enterprise of planning holds most dear: democracy, quality of life, equity, community, place, and the future of the planet we all share.

Planners on the ground are ahead of the academy on this. Students coming out of planning degrees are turning their skills towards food systems, radical sustainability planning, and the sharing economy in both formal and informal capacities. We need to follow their lead and incorporate these questions more centrally into our own work.

APPENDIX A

List of Archives

Boston Municipal Archive (BMA)

Boston Public Library, Government Documents Collection (BPL)

UMass Boston Public Archives (UMB)

Seattle Municipal Archives (SMA)

Seattle Public Library, Seattle Collection (SPL)

APPENDIX B

List of Interviews

Note:

For the most part, interview subjects gave me permission to use their names. In the rare cases where they didn't, I have listed just their position. In many cases, I followed up with interview subjects extensively through casual conversation and by email. I have only listed here the dates of formal interviews that I recorded, transcribed, and coded. Interviews were conducted between January 2012 and May 2016.

Boston:

Steve Changaris, SWANA, 1/13/12

John Fischer, MassDEP, 1/30/12

James Goldstein, Tellus Institute, 1/27/12

Betsy Johnson, Flynn Advisory Committee Member, and Recycling Advocate, 5/13/16

Isabel Lopez, MassCOSH, 1/6/12

Craig Lovett, Mass Hauling, 2/12/12

David Minisian, Mass CLU, 1/9/12

Adam Mitchell, Save that Stuff, 2/9/12

Brooke Nash, MassDEP, 3/26/15

Alex Papali, Clean Water Action, 1/23/12

Lynne Pledger, Clean Water Action, 1/26/12

Amy Perlmutter, March 27, 2015

Public Works Employee (1), City of Boston, 1/31/12

Public Works Employee (2), City of Boston, 1/31/12

Al Raine, Former Aide to Governor Dukakis, 5/13/16

Neil Sullivan, Former Policy Chief to Mayor Flynn, 5/10/16

Weezy Waldenstein, SEIU, 1/27/12

Attorney, American REF-Fuel, 5/13/16

Seattle:

Diana Gale, Former Head, Seattle Solid Waste Utility, 1/7/15

Tim Croll, Current Head, Seattle Solid Waste Utility, 1/8/15

Ray Hoffman, Former Head, Seattle Public Utilities, 1/13/15

Josh Marx, King County, 7/30/14

Mike Rosen, PRR, 7/29/14

Heather Trim, Zero Waste Seattle, 1/29/15

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