Introduction

When World War II ended in 1945, two of Europe's largest economies, the United Kingdom and what would eventually become West Germany, struggled to provide even the most basic necessities to the bulk of their populations. But, devastating as the war and its consequences were, they were not the sole factors responsible for this situation. After all, although Britain, unlike Germany, had long been one of the richest countries per capita,[1] most citizens in both countries had little surplus income. The two could thus be characterized as societies of need rather than of plenty. Through 1945, moreover, neither managed to implement techniques of mass production broadly across industries, despite extensive attempts to emulate the pioneer in this area, the United States.[2] In the decades that followed the end of the war, however, both the United Kingdom and West Germany developed the capability to produce large amounts of goods for their own citizens and, for the Germans in particular, to export around the world, although their paths toward mass production regimes differed considerably from that of the United States and also from one another.[3]

[1] Adam Tooze makes this important and often overlooked point in *The Wages of Destruction: The Making and Breaking of the Nazi Economy* (London: Penguin Books, 2007).

[2] See, for example, David A. Hounsell, *From the American System to Mass Production: The Development of Manufacturing Technology in the United States* (Baltimore, MD: Johns Hopkins University Press, 1984); Steven Tolliday, *The Rise and Fall of Mass Production* (Cheltenham, UK: E. Elgar, 1998).

[3] See, for example, Charles Sabel and Jonathan Zeitlin, "Historical Alternatives to Mass Production: Politics, Markets, and Technology in Nineteenth-Century Industrialization," *Past and Present* 108 (1985): 133–176; Charles Sabel and Michael Piore, *The Second Industrial Divide: Possibilities for Future Prosperity* (New York: Basic Books, 1984); Charles Sabel and Jonathan Zeitlin, eds., *World of Possibilities: Flexibility and Mass*

Mass production formed an important prerequisite for mass consumption. For this reason, key characteristics of the consumer society – substantial disposable income across broad swaths of society, widespread car ownership, broad dispersion across the population of consumer durables such as radios, washing machines, and refrigerators – were already emerging in the United States before the 1930s. And even though the full flowering of this trend was interrupted by the Great Depression and wartime rationing, by the 1950s, America was well on its way in this direction. Not long afterward, by the 1960s, most citizens in both the United Kingdom and West Germany were also moving steadily toward experiencing the transition from need to plenty, if still to a far lesser degree than the United States and with some lag. This signaled not only a massive economic change but also an extremely important social and cultural one.

Mass production enables – indeed, to some degree requires – mass consumption. But the third element of the sequence is an inevitable if often overlooked concomitant of the advent of the consumer society, following along immediately in its wake: substantial increases and significant qualitative changes in streams of waste. As scholarly studies of the United States – the first consumer society and thus also the first to have to deal with consumerism's detritus – demonstrate, the flip side of consumption also involved important changes in social and cultural attitudes, and such changes also came, with some delay, to European and then other followers.[4] Larger and different waste streams also entailed important economic changes, as more and more resources related to all of the factors of production – land, labor, capital, entrepreneurship, and technology – were brought to bear on the collection and disposal of waste. And this in turn entailed development over time of new technologies, new management methods, and altered ownership arrangements and industry structures.

This book explores the social, cultural, and economic fallout of the emergence of the consumer society through sustained attention to changes in the waste handling business over time. It focuses not on the United States, the pioneer about which much has already been written. Because of its sheer scale, relatively low population density, and other factors,

Production in Western Civilization (Cambridge and NewYork: Cambridge University Press, 1997).

[4] Susan Strasser, *Waste and Want: A Social History of Trash* (New York: Henty Holt and Company, 1999).

the United States was very different from most other countries in its path of development.[5] Instead, our focus is on the British and West German cases. Consumer society emerged at about the same time in both of these countries in the decades immediately after the end of World War II, the starting point for the study. The two were also similar in terms of population density, degrees of urbanization, eventual Europeanization, and other factors relevant to the production, collection, and disposal of waste. And there is yet another compelling reason to choose the two for comparison: in the period after the end of World War II, they sometimes drew inspiration from one another, rather than from the United States, about how best to manage and reform waste collection and disposal systems. Despite these commonalities, however, a comparison of the two will also highlight profound differences, among other things in technology, industry structures and practices, and legislation. Explaining similarities as well as differences is one of the key tasks in the chapters that follow. Before we get to an overview of the structure of the book, though, we need to further contextualize the topic and to define some key concepts.

The problems of production and disposal of solid and other waste resulting from human consumption and subsequent disposal of that waste have been a constant feature of all human societies, but they were kept in check for a long time by a number of factors, including poverty, which severely constrained consumption of goods and thus also production of waste; generally low levels of urbanization and population density; limited use of packaging, especially nonbiodegradable packaging; and limited scientific understanding of the public health implications of poor waste disposal practice. Consequently, until relatively recently it was typical worldwide for collection and disposal of waste to be devolved to the individual and/or the private sector, with the latter engaged in particular in what was then termed the "salvage" of any waste that could be

[5] Strasser, *Waste and Want*; Joel A. Tarr, *The Search for the Ultimate Sink: Urban Pollution in Historical Perspective* (Akron, OH: University of Akron Press, 1996). The issue of scale is a crucial one: already in the 1930s, the United States was a major exporter of scrap metal, a key component of steel production. Indeed, this was one of the export items denied to Japan in 1940, which was one important factor leading eventually to the attack on Pearl Harbor. See, for instance, Michael A. Barnhart, *Japan Prepares for Total War: The Search for Economic Security, 1919–1941* (Ithaca, NY: Cornell University Press, 1987), pp. 168, 186–188, 190, 193–194, 201. The United States continues to provide the world with huge amounts of metal scrap, wastepaper, and other "waste" materials. Indeed, the United States is "known in the trash world as 'the Saudi Arabia of scrap.'" See Evan Osnos, "Wastepaper Queen," the *New Yorker* (March 30, 2009), p. 49.

reused. It was only in the mid-nineteenth century, in the wake of industrialization and ever-higher levels of urbanization, especially in Western European countries, that things changed. At that time, legislation and growing municipal activism led to the establishment of cleansing departments within local authorities in Britain, the German states (a unified German nation came about only in 1871), and other industrialized or industrializing areas in Europe. Their remit was regular removal of waste, primarily to protect public health, and this public health dimension has remained an essential desideratum of publicly funded municipal waste collection authorities to the present day.

In spite of this focus on public health by local authorities, however, there have always been important economic and business dimensions to household waste, too. Financing collection and disposal has been one perennial issue, as have the related goals of efficiency and value for money in carrying out these activities. Professionalization of the engineers and managers responsible for city waste collection was also an important factor, leading eventually to the establishment of a recognizable practice of "waste management" (although that particular phrase is of relatively recent vintage). And collection of municipal household waste has also always involved a large workforce, with associated issues of management and industrial relations.

There are other key economic and business dimensions as well. For one thing, in spite of the municipalization of waste collection in much of the industrialized and urbanized world in the latter part of the nineteenth century, there has always been a role for the private sector. It certainly predates the 1980s, when, led by Margaret Thatcher and Ronald Reagan, widely held perceptions about the respective roles of government and private industry changed dramatically across the capitalist world in favor of the latter.[6] As we shall see, there were often times when private contractors were – for a fee – permitted to pick through municipal rubbish heaps for salvage to sell off, and "rag and bone men" from the private sector collected a range of items directly from households.[7] What is more, even though the collection of municipal household refuse in most European cities had become a public function during the period from the 1850s until the 1980s, its disposal was often not. For example, until the advent of British legislation in the 1970s, which placed significant

[6] Robert Millward, *Private and Public Enterprise in Europe: Energy, Telecommunication and Transport, 1830–1990* (Cambridge: Cambridge University Press, 2005).

[7] For an excellent overview of scrap collectors in the United States, see Carl A. Zimring, *Cash for Your Trash: Scrap Recycling in America* (New Brunswick, NJ, and London: Rutgers University Press, 2005).

restrictions on the operation of landfills for the first time, dumps were often not only privately owned and operated (as they were even after the legislation), but also virtually unregulated. City governments, in other words, paid the private sector to dispose of the trash they collected but paid little heed to where it might eventually end up. Thus, eventually, in many municipalities the private sector became much more involved in the whole range of what became known as "waste management" practice by taking over some of the traditional municipal functions, by forming partnerships with the public sector, and by other means. As time has gone on, the nature of the private sector of the waste handling industry has changed dramatically. Largely family firms with low capitalization to begin with, many of the private companies have become very large indeed, with some becoming joint-stock companies and a number even developing into multinationals. We want to examine this process of evolution in the private sector in a range of contexts.

One of the themes of this book, then, is the evolving relationship between the public and the private sectors through time in the two countries, with simultaneous investigation of the associated balance that had to be struck between the public health desideratum of waste handling on the one hand and its business and economics on the other. The former has been a consistent feature of municipal household waste collection since the mid-nineteenth century and is embodied in the designation "public cleansing." The business and economics of waste played a crucial role in public cleansing from the beginning as well, as we show throughout this book. But they have become more explicitly recognized only relatively recently, something captured in the modern designation of the field as "waste management." This suggests a number of questions. How can the most efficient and cost-effective system of waste collection and disposal be set up if the public health remit – which often cannot be made "to pay for itself" – stands at the center of waste handling practice? What were the incentives for the private sector to enter the industry, and what were the barriers to entry? How have incentives and barriers changed through time? Why and how has the private sector become more prominent over time, not only in areas in which it had a long tradition, such as salvage collection and reprocessing (related but not identical to what we now term recycling) and landfill ownership, but also in others, such as household waste collection? We explore all of these questions at length, both historically and comparatively, in this book.

But before we go any further, let us pause to consider this: What *is* "waste"? Once we start trying to unpack this deceptively simple word, we find that it is far from straightforward. Therefore, we will also have

to consider these related questions: Which aspects of waste are dealt with in this book, which are not, and why?

"Waste" might be defined simply as anything that human beings discard. In other words, it can range from wastewater from baths and showers and waste from the human body delivered through sewage systems to rubble from torn-down buildings, the cardboard box in which a shop owner received a shipment of merchandise and is now surplus to requirements, the television that broke down and is discarded by its owner, or the sweet wrapper tossed onto the street as litter. Broadly speaking, then, we can discern two categories of waste: liquid and solid. We do not deal with the former here at all. For one thing, liquid waste is examined much more extensively in the secondary literature than is solid waste.[8] Second, it involves different technologies, infrastructure, and players than does solid waste. And finally, to a large degree, growth in output and processing of sewage is arguably not so much a function of the emergence of consumer society as of growth in population and urbanization.[9] Thus, liquid waste would have been far less suited than solid waste for a thorough examination of one of the key relationships at the heart of this study: the relationship between emergent consumerism on the one hand and quantitative and qualitative changes in the waste stream on the other.

We are not able to deal with the whole of the solid waste stream either, however. As outlined already, there are several different categories here. Construction waste is typically the largest part of this stream, whether measured by weight or by volume, followed by industrial and trade waste.[10] Construction waste is by and large inert – that is, there are few organic components in it. Consequently, while it may contain substances such as asbestos or other toxins, it is often considered to be "clean fill" and can go straight into the ground without much concern about

[8] See, for example, James Benidickson, *The Culture of Flushing: A Social and Legal History of Sewage* (Vancouver: University of British Columbia Press, 2007); Martin Melosi, *The Sanitary city: Urban Infrastructure in America from Colonial Times to the Present* (Baltimore, MD: Johns Hopkins University Press, 2000); H. H. Stanbridge, *History of Sewage Treatment in Britain* (Maidstone: Institute of Water Pollution Control, 1976).

[9] No doubt there have been some effects from consumerism (e.g., more showers and baths are taken per capita per day in consumer societies than was the case earlier).

[10] According to the *Financial Times*, in 2004 for the EU 27, construction waste accounted for 45.2 percent of the total waste stream by weight, followed by 38.8 percent for industrial/trade waste. Household waste accounted for 11.9 percent, with 4.1 percent being composed of toxic waste. See Ross Tieman, "A Problem That Comes in Heaps," in *Financial Times, Water & Waste Management Special Report* (December 16, 2008), p. 4.

effects on groundwater or public health. Trade and industrial waste, on the other hand, may be more complex than construction waste in composition, but it is also often heavily composed of clean and frequently inert elements as well. Not coincidentally, then, both construction and trade and commercial waste collection and disposal are often dominated by the private sector owing to the relative simplicity of dealing with them, even in the context of present-day regulations.

Household waste, which constitutes one of the smallest parts of the solid waste stream, is also the most visible, and it is also important in a number of other ways. Coming to terms with household waste for the purpose of preserving public health was the central impetus behind initial legislation empowering municipalities to collect it and supervise its disposal. If household waste is not collected, whether because of inefficiency, lack of funding, or industrial action, public health concerns are quick to follow, often with substantial political fallout. And even if it is collected efficiently and on time, other concerns have emerged. This has been especially true since the 1970s, as a broader conception of "environmental health" gradually displaced the older public health dimension, again with social, cultural, and political impacts. Finally, household waste is composed not only of substantial organic waste, primarily from food, but also of other materials that have increased in quantity and complexity with the growth of consumerism and that – depending on markets and technologies – may be capable of being salvaged and/or recycled.

Examination of household waste therefore brings into focus the complex interactions among the public/environmental health dimension of waste, the impact of the consumer society on the waste stream, the effects of changing political and cultural perceptions of what should be done about waste, and the economic and business dimensions of the waste industry. To be sure, the interaction of all of these elements sometimes taxes the public sector's commitment to efficiency and financial prudence, but because it also provides a business opportunity, it often attracts the attention of the private sector. Focusing on household waste allows careful investigation of these complexities, although, as we shall see shortly, defining and quantifying "household waste" is not a simple task.

Two tensions, therefore, stand at the heart of this book. The first involves a tension among three potential objectives: preserving public health (or more broadly, environmental health) at practically any cost; delivering waste handling services at the lowest possible price; and efficient delivery of waste services. The second key tension is between the

private and public sectors. These tensions and changes in the balance struck between them since 1945 in the United Kingdom and West Germany form major themes of this book. In addition to these, there are four others that we would like to explore as well. All four are interconnected to some extent with the first two but also with one another in various ways.

The first has to do with the perennial issue of the possibility of gaining value from waste, of getting "cash for your trash,"[11] such as through salvage (reconceptualized as "recycling" since the 1970s), recovery of methane gas from landfill, or from incineration of waste to generate electricity. This pursuit has exercised professionals in the cleansing industry certainly since 1945, and it has become a more pressing concern more recently, especially since the 1970s. Yet, it is vexed in many ways. For one thing, it gives rise to the sometimes difficult legal issue of who owns the waste, which is something we address from time to time throughout the book. What is more, there is also a definitional issue: in the strictest sense, once something has been retrieved (or diverted) from the waste stream and sold – as scrap iron for use in steel manufacture or a first edition of a Charles Dickens novel fished from the dump and auctioned to the highest bidder – it has ceased to be waste at all and thus might be seen as outside the purview of this study.

At the same time, this process of salvaging value is a vital component of waste handling as a business (or businesslike) activity, something emphasized to a greater or lesser degree in both public and private sector practice. Salvaging value, however, is far from straightforward: markets for "waste" food, paper, glass, metals, and other products fluctuate considerably depending on supply and demand. It is often expensive to recycle particular things, such as certain plastics, which, given legislation, political will, or social pressure may in any case be mandated. To what extent and how are such risks and uncertainties integrated into budget processes for city- or state-owned enterprises in the industry or into business strategies for private sector firms? Similarly vexing questions arise in relation to the incineration of waste, where the need for fuel to power incineration plants has resulted in market demand for waste that sometimes exceeds local output. Waste therefore must be brought in from further afield for incineration, sometimes even from abroad. What can be counterintuitive in this case, however, is the fact that the power

[11] The phrase comes, of course, from Zimring's history of salvage in the United States, *Cash for Your Trash*.

plant requiring the waste for fuel is often *paid* to take the waste from those who produce it in another town or another country, frequently owing to shortage of landfill and/or legislative mandate. The bottom line is that generating electricity from trash through incineration may solve some problems such as shortage of landfill, but it generally does so at the expense of undermining other goals such as waste reduction or limiting airborne emissions. Clearly, then, even if the salvaging value from waste makes it not waste at all, it is still a major issue for public cleansing and waste management. It also highlights the tradeoffs and tensions between political and social goals on the one hand and market forces on the other in the management of waste, and it thus forms a natural – indeed necessary – theme to consider carefully throughout this book.

A second additional theme, related in part to salvage/recycling, is technological change. For salvage/recycling, the issue of technology is perhaps a self-evident one: except for relatively easily recycled items such as paper, glass, aluminum, and ferrous metal, technological breakthroughs were required to enable recycling to take place at all.[12] For particular plastics, but also for composite materials, these have often proven particularly difficult to develop. But technological change has been important in the industry's development in other ways as well. Rationalization of garbage can design and of collection has been extremely important, as have developments in the design and construction of landfills, which have changed dramatically from mere dumps into sophisticated technological systems. Automation and new vehicles have also led to substantial changes, not least in the number of workers required per unit of trash collected. Optical and mechanical separation technologies have often obviated the need for human intervention as well, such as in relation to initial separation of "recoverables" from items to be disposed of in more traditional ways through landfill or incineration. Incineration technology has also changed markedly through time, often allowing greater throughput, more efficient combustion, less pollution, and more output of electricity. What is more, these technologies have often been interrelated in various ways, interrelationships that have shaped the relative economic viability and attractiveness of landfill and incineration, as well as salvage or recycling. And all of these developments and more have been underpinned by a more general process of "scientification" of waste

[12] Jeffrey L. Meikle, *American Plastic: A Cultural History* (New Brunswick, NJ: Rutgers University Press, 1995).

handling involving extensive research and development work and incremental innovation.[13] Technology is thus clearly a central aspect of the development of the industry and is addressed in the chapters that follow, with particular attention devoted to this theme in Chapter 2.

The third additional theme is closely related to the first two: regulation. Government regulation of and legislation regarding this industry have certainly formed key drivers in its development. Government action has led to major rethinking of the fundamental tasks the industry seeks to carry out. It has significantly affected the costs of carrying out legally mandated waste collection and disposal activities; the extent of and conditions set on salvage/recycling; limits placed on emissions of incinerators and/or on groundwater contamination through landfills (thus forming a key determinant of the economic viability of each of them); and therefore, at least to a certain degree, the extent to which the public sector or the private sector takes primary responsibility in a particular time or place for carrying out waste-handling related activities.

Finally, technological change and evolving regulations form a large part of the basis for our exploration of the theme of potential convergence over time of policy and schemes of practice in relation to waste handling in the United Kingdom and Germany. On the technological side, one plausible explanation for any convergence might be the process of scientification already noted; another is the fact that industry professionals and policy makers were more or less aware of best practice in the other country and more or less willing to try to emulate it. On the regulatory side, we can identify a cascading series of processes of regionalization, nationalization, and eventually Europeanization. Waste management (or more accurately "public cleansing" from about the mid-nineteenth to the late twentieth century) was historically speaking a local concern, something that remained true long after 1945. Certainly, national legislation imposed some standard expectations on local practice, but it was only in the early 1970s that effective national legislation

[13] For the "scientification" concept as applied to the development of economic policy in Germany after World War II, see, for instance, Tim Schanetzky, *Die große Ernüchterung: Wirtschaftspolitik, Expertise und Gesellschaft in der Bundesrepublik 1966 bis 1982* (Berlin: Akademie-Verlag, 2007); as applied to the discipline of political science in the United States, see Jon R. Bond, "The Scientification of the Study of Politics," *Journal of Politics* 69 (2007): 897–907; and more generally, see Peter Weingart, "The Moment of Truth for Science: The Consequences of the 'Knowledge Society' for Society and Science," *EMBO reports* 3 (2002): 703–706, available at http://www.outreach.psu.edu/programs/rsa/files/Reading_Weingart_Peter_The_Moment_of_Truth_for_Science_EMBO_reports_3_8_2002.pdf (accessed July 14, 2009).