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The City Recycled: The Afterlives of Demolished Buildings in Post-war Beijing

by

Shih-yang Kao

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in

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in the

Graduate Division

of the

University of California, Berkeley

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Professor Richard Walker, Chair

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Abstract

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by

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Doctor of Philosophy in Geography

University of California, Berkeley

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This dissertation traces the afterlives of demolished buildings in post-war Beijing as a case to interrogate the changing role of waste in the political economy of development in contemporary China. In contrast to the mainstream narratives about China's post-Mao transformation, which often render waste as an "external cost" of economic development, I argue that waste has remained treated in China as a resource from the Mao to post-Mao eras. What has changed during the period of market reform, instead, is the geography of waste consumption. I establish this argument by showing a profound change of the network of institutions that removes used building materials from Beijing's demolition sites. In Mao's Beijing (1949-1978), the state was the main consumer of used building materials. Governments and state-owned enterprises in the city used the materials to accomplish production goals and to construct public urban projects. Used building materials, therefore, stayed at the urban center and contributed to the modernization of the city. In contrast, in the reform era (1978-present), villages and towns surrounding Beijing have become the center of demolition waste consumption. These peripheral villages and towns appropriate used building materials from the city to cultivate resources and to open up opportunities for growth. In focusing on the network, this study further reveals the diverse forms of businesses involved in the organization of waste work. In this respect, I show that the labor process of un-building (that is, the process of stripping a building down and of removing the resulting materials from its original location to another location) has always been a value-adding activity in China: it gives used building materials a second life. In the reform era in particular, the recovery of demolition waste constitutes a vibrant part of the urban economy. In urban areas, businesses emerge to organize the collection, sorting, and transportation of used building materials. These businesses purchase waste materials from property owners in the city, help urban governments reduce the costs of disposal, and offer a great number of jobs for the city's rural migrants.

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INTRODUCTION

On June 16, 2010, the Songzhuang Art Gallery, in Beijing's Tongzhou District, held an opening ceremony for a special exhibit, "A City Besieged by Waste" (*laji weicheng*). This exhibit showcased the works of Wang Jiuliang, who was a Beijing-based free-lance photographer and documentary film director. Since 2008, Wang Jiuliang had been documenting municipal and illegal garbage dumps in Beijing. The exhibit included—along with two installation art pieces—130 photographs that Wang had taken over the course of two years. The Songzhuang Art Gallery was located in a rather remote area, as it would take about one and a half hours to travel from downtown Beijing to the gallery, whether by private or public transportation; nevertheless, the opening ceremony attracted several hundred visitors, including artists, environmental activists, university professors, and students. For members of Beijing's art circles, the exhibit was without doubt unconventional. It was a bold critique of mainstream artists' obsession with forms and at the same time a call to rethink art as a general medium for social critique and activism. For environmental activists, Wang's project was indispensable. It echoed their call for the need to imagine a new model of national development, one that would place sustainability at the forefront of policy agenda.

One of the most discussed pieces in Wang's exhibit was an outdoor installation entitled "Fruttee" (*guoka*). *Fruttee* is the product name for a packaged fruit-flavored instant coffee manufactured by the Thai coffee company Ciphona. The product has been quite popular in China for some years since its introduction to the country in the 2000s. For this particular piece of art, Wang had placed more than ten thousand *Fruttee* packages on the gallery's entrance plaza (Figure 1). Wang said that he had found these packages in a garbage dump somewhere in Beijing; the distributor of the product, Ciphona China, had disposed of them apparently because the contents of the packages had expired. For Wang, these disposed coffee packages exemplified what was wrong with modern capitalism. In discussing this work with me on one occasion, Wang declared, "Farmers grew coffee trees. Workers ground coffee beans into powder and put the powder in packages. It then probably took thousands of gallons of gas to transport all these packages thousands of miles from Thailand to Beijing. But what for? They all ended up in a garbage dump." The message that Wang tried to convey through *Fruttee* then was very clear: that over-production as a tendency of modern capitalism ultimately would cost the environment dearly.

About a year later, on July 17, 2011, I met Zhang Kangsheng, the founder and the manager of Meiman Jiayuan Garbage Removal Company, in a public forum on Beijing's garbage problem. The forum was held weekly by Green



Figure 1 “Fruttee.” (June, 2010)

Beagle, a Beijing-based environmental NGO. Zhang had been invited to give a talk based on his experience as a garbage remover; I was there to moderate his talk. After the talk, we invited Zhang to a hotpot dinner. Zhang was apparently in a very good mood. He said that for about fifteen years, he had worked in Beijing as a rural migrant, in a business that most people, even migrants themselves, had considered dirty and bereft of laudable skills. He said he had never imagined that one day a group of educated young people would become interested in his life and take his work seriously. Zhang then noted that most people in the city did not understand, and indeed were unwilling to recognize, the value in the work of garbage removal. “For example, have you all heard about this art exhibit in Songzhuang called ‘Fruttee’?” he asked, “It almost cost me a lawsuit.” Boss Zhang then went on to explain that his company was the one that Ciphona China had hired to dispose of the expired Fruttee packages. After Wang’s installation art went on public display, Ciphona China experienced a severe publicity crisis; the sale of Fruttee dropped significantly. Ciphona China blamed the crisis on Zhang. The company believed that those expired coffee packages had ended up in the Songzhuang Art Gallery only because Zhang had not disposed of the packages in a dump, in apparent violation of the initial arrangement. The company declared that, if Zhang failed to compensate it for its losses, it would bring a lawsuit against him.

Zhang ultimately convinced Ciphona China that the incident had not been his fault. He had disposed of the packages in a dump, in accordance with the contract; what had happened to those packages after the disposal had been beyond his control. “Wang Jiuliang probably will never know how much trouble his exhibit got me into,” Zhang said, “For him, people like me simply don’t exist.”¹

This dissertation, which offers a close analysis of the afterlives of demolished buildings in postwar Beijing, addresses the same issue that Zhang alluded to in his complaint about Wang Jiuliang: that contemporary narratives about China’s waste—be they policy documents, news reports, or artworks—are often more concealing than revealing. Contemporary writings about China’s post-Mao transformation rely on the concept of “external cost” (or “byproduct”) to frame China’s waste problems. The established line of the story is that as improving household incomes have contributed to a greater sense of ease in getting rid of old belongings, Chinese cities are now facing a crisis of garbage over-accumulation. Evidence purportedly demonstrating the existence of the crisis includes the increasing number of illegal dumps that consume farmlands and pollute water sources, and contentious debates between urban governments and residents regarding incineration as a way to handle waste. Conceptualized as an “external cost,” waste has become an example that people use to validate and reinforce a wider critique of China’s post-socialist transformation: that the country’s ferocious economic growth comes at the great price of environmental destruction.²

The present study shows that the discourse of externalities, which characterizes waste as a burden to the environment, not only misinterprets the role of waste in China’s market transformation but also prevents people from seeing the diverse forms of waste-related works. The afterlives of demolished buildings in Beijing reveal that, waste has remained treated as a resource from the socialist era to the reform era. What has changed, however, is the geography of waste consumption. I will establish this argument through the following four empirical findings:³

¹ As far as I know, Zhang never talked to Wang Jiuliang about the trouble that the installation art brought to him. But out of curiosity, he did go to Songzhuang to see the exhibit. We asked Zhang what he thought about the exhibit. He replied, “Country folk like me don’t understand you city folks’ art.”

² For example, the UK newspaper the *Guardian*, in its article “China’s Spiraling Consumption Is Fuelling Waste and Pollution,” declared, “Economic growth may be maintained, but as the environmentalists warn, we may need another two Earths to meet the new US-style consumption of the Chinese nation” (August 21, 2009).

³ Although this study does not fully explore the environmental and health problems associated with the circulation of demolition waste, it does not deny the possibility that such problems may exist. Dust pollution can cause asthma, and wall paints can pollute water and soil. This study,

(1) In the socialist period (1949–1978), governments in Beijing treated used building materials, or what the contemporary world would call “demolition waste” or “building garbage,” as a resource. They did not regard used building materials as a type of waste. At that time, government authorities in Beijing actively engaged in the collection and recovery of the materials. To monopolize demolition waste, they forbade the unauthorized collection and sale of the materials. Such a regime of state building recycling channeled most of the used building materials to state enterprises and agencies in the city. These state actors used the materials to accomplish production goals and to construct public urban projects. In other words, in socialist Beijing, used building materials stayed in the urban center and contributed to the modernization of the city.

(2) In the reform period (1978–present), in contrast, peripheral towns and villages have become the main consumers of used building materials. The fiscal reforms of the Chinese state in the 1980s gave local governments the incentive to promote local economic growth. As resource redistribution gradually became an insignificant part of local administration, urban governments became less and less interested in the collection and allocation of waste. Used building materials then became less valuable to the state but more accessible to non-state actors. The 1980s, thus, witnessed the demotion of used building materials from “demolition materials” (*chaichu cailiao*) to “building garbage” (*jianzhu laji*) in official discourse. Meanwhile, during the 1990s, as urban-based industrial technocrats rose to power in the aftermath of the Tiananmen crackdown, policymakers in the central government came to favor urban development and the development of large state-owned enterprises. Villages and towns in rural areas not only began finding it more difficult to secure investment and loans, but also faced policies that would jeopardize their prospects for development. In order to improve their position in the market, rural towns and villages, particularly those located close to cities, began to appropriate materials that the city regarded as waste, including used building materials, from urban areas. In the reform era, then, demolition waste from Beijing has contributed to the development of

however, does provide a starting point to analyze these issues. If the periphery is now the center of demolition waste consumption, then we can ask whether the circulation of demolition waste has contributed uneven distribution of environmental and health problems.

rural economy in northern China.

(3) From the socialist era to the post-Mao era, then, the labor process of un-building (that is, the process of stripping a building down and of moving the resulting materials from their original location to another location) has always been a value-adding activity: it gives used building materials a second life. In the reform period in particular, the recovery of demolition waste has become a vibrant part of Beijing's urban economy. In urban areas, various forms of businesses, such as demolition companies and recycling companies, have emerged to organize the collection, sorting, and transportation of the materials. These businesses not only help peripheral villages and towns to acquire the resource they need, but also create a great number of jobs for the city's rural migrants.

(4) The group of actors who benefit the most from this shifting geography of demolition waste consumption are property owners. Owners of to-be-demolished buildings can often charge demolition companies for the right to tear building down, as demolition companies can make a profit from the sale of salvaged building materials; villages located at the city's fringe lease out village lands to recycling companies to build recycling marketplaces, where recyclables (from not just demolition sites, but also residential neighborhoods and commercial establishments) are sorted according to their physical properties; rural villages that run debris dumps collect dumping fee from truckers and entrance fee from migrant scavengers. These diverse rent-seeking practices vividly illustrate the value of use building materials.

Why demolition waste, and why Beijing? Since the communist revolution in 1949, building demolition has been an important force behind the production of urban waste in China. In the socialist period, the ultimate goal of urban planning was to transform the "consumption cities" of the bourgeoisie into "production cities."⁴ In order to make room for factories and public infrastructure in densely built urban areas, urban governments in China destroyed a significant amount of the old building stock. In Beijing, for instance, between 1949 and 1980, about

⁴ On the issue of urban development, the communist leadership at that time believed that Chinese cities were too "feudalistic": only a fraction of the urban population was involved in manufacturing production. The leadership's solution was to build more factories in cities. See Hoa (2006: pp. 30–31) and Wang (2011: pp. 66–72).

3,100 of the city's 7,000 *hutongs* were destroyed.⁵ After the market reforms were well underway in China, the establishment of urban leasehold markets made land redevelopment lucrative. One well-known side of the story is that China has now become the world's largest construction site.⁶ A less known fact, however, is that because of large scale of urban demolition, the amount of demolition waste hit an all time high. It is estimated that demolition waste nowadays constitutes 40% to 60% of the total urban waste in China (Li *et al.*, 2008). Beijing is without doubt the country's epicenter of urban demolition. It is estimated that in the past fifteen years or so, the city has generated no fewer than twenty-five million tons of demolition waste annually (Li *et al.*, 2008; Hu *et al.*, 2010). This number places Beijing in the number one slot regarding demolition-waste-producing cities not just in China, but around the world as a whole.

A Commodity Chain Approach to Waste

For the current study, I have adopted a commodity chain approach to study Beijing's demolition waste. I trace materials from their points of origin (i.e., demolition sites) to their final destinations of consumption and disposal; I describe the networks of institutions, communities, and people that channel the flows of these materials; I also examine how the networks have changed from the socialist era to the reform era. My approach to these topics here is certainly atypical in the current waste scholarship. A justification for this approach is therefore necessary. To achieve this objective, in this section I discuss four influential bodies of literature within the current waste scholarship: waste management literature, environmental justice literature, discursive analyses of waste, and literature on scavenging and recycling in developing countries. I will first point out their contributions, explanatory limitations, and the differences among them. I will then explain what a commodity chain approach is and why it is the most promising analytical tool for the study of Beijing's demolition waste.

Let me begin with the waste management literature and the environmental

⁵ "Hutong" refers to alleyways between two lines of courtyard houses (*siheyuan*), which were residential compounds typical in Beijing. The statistics come from Ma (2001).

⁶ According to the data collected by Richard Walker and Daniel Buck (2007), in Shanghai, for example, "by the mid 2000s, floor space in commercial buildings has hit 12 million square meters, and housing over 60 millions square meters." Moreover, "in Beijing annual housing construction increased from 1 million square meters in 1975 to 18 million square meters in 2001. By 2006, over 10 million square meters of office space had been constructed in Beijing, and more than 90 million square meters of residential space [...]. The annual value of construction throughout China in 2000s has been estimated at \$67 billion, and now accounts for half of all new building space in the world" (pp. 48-49).

justice literature. These two bodies of literature certainly differ from each other regarding their general focus: waste management literature concerns regulatory frameworks whereas environmental justice literature concerns the uneven distribution of environmental benefits and costs. Nevertheless, they both rely on a critical assumption in developing their respective arguments: waste is an external cost, or something intrinsically hazardous.

With its overall focus on waste-related regulatory frameworks, waste management scholars have zeroed in on such specific topics as the implications of waste management for urban sustainability (Ehlers, 2009; Kopfmuller *et al*, 2009), privatization of waste services (Samson, 2010), community-based waste management (Pariseau *et al.*, 2006), and urban governance (Melosi, 2005; Davis, 2008). These studies, regardless of their specific focus, argue in common that waste, as an external cost, is constitutive of society. It creates bureaucracies, shapes politics (especially urban politics), and remakes the landscape of civil society.

Environmental justice literature, in contrast, places a greater emphasis on society, particularly socially marginalized groups therein. These scholars' main concern is uneven distributions of waste. In this body of literature, therefore, analytical approaches are often geographical in their substance. Two examples of the environmental justice approach to waste include Bullard's (2000) study about working-class African American communities' struggles against landfills, incinerators, and industrial discharges and Pellow's (2004) study about conflicts over solid-waste disposal and recycling in Chicago. Environmental justice literature demonstrates that socially marginalized groups are the main bearers of environmental costs. It calls for a more just distribution of hazardous materials throughout society.

Both waste management literature and environmental justice literature treat waste as an external cost, or something external to economies and intrinsically hazardous. The main focus of these two bodies of scholarship, in other words, has been the politics of waste. One problem with the conception of waste as an external cost, however, is that it overlooks the economy of waste. In these two bodies of literature, there is little discussion about the network of businesses that ship, organize, and process these waste materials. In these two bodies of literature, people like Zhang seldom exist.

The third body of literature I consider here is one that conducts discursive analyses of waste. Drawing upon Mary Douglas' (1966) notion of waste as "matter out of place," scholars in this field of study examines how social actors talk about waste to create and maintain boundaries in social, political, and physical spaces. One major difference between discursive analyses of waste and the aforementioned two bodies of literature, thus, is that the former moves discussions

beyond the politics of waste to the politics of identity. One good example here is Juanita Sundberg's (2008) analysis about how remnants left by undocumented migrants on the border between Arizona and Mexico are talked of by people living on the U.S. side of the border to articulate what defines an American. Another example is Gidwani and Reddy's (2011) analysis of the operation of waste in debates in colonial India on issues such as settlement, property rights, and infrastructure.

Mary Douglas' conception of waste as matter out of place is inspiring. It encourages us to ask how certain stuff is classified as waste (that is, how waste becomes waste), and how such a classification helps create order and boundary. However, I find that the way in which this concept is used by scholars such as Sundberg and Gidwani and Reddy is far from satisfactory. Focusing primarily on discourses about waste, these analyses ignore the materiality of waste. They have forgotten that "out of place" constitutes only one part of Douglas' definition of waste. The other part is "matter"; for Douglas, waste is intrinsically a matter of materiality. Discursive analyses of waste then have the same problem that waste management literature and environmental justice literature have: that there is little discussion about the economy of waste.

In the current waste scholarship, one body of literature that takes the economy of waste seriously is literature on scavenging and recycling in developing countries. Scholarship in this field of study regards waste as materials that possess unrealized values. This scholarship is interested in the question of how the labor processes of waste recovery, which transform discarded materials into resources (particularly industrial inputs), are organized. For these studies, thus, waste is neither intrinsically bad (or hazardous) nor external to an economy. One landmark study in this vein is Birkbeck's (1979) analysis concerning scavengers at garbage dumps in Cali, Colombia. He argues that, because scavenging provides industries with cheap materials, scavengers are best thought of as "self-employed proletarians in an informal factory". Another well-known study, which counters Birkbeck's argument, is Sicular's (2009) analysis of garbage dumps in Indonesia. He argues that because scavengers sell recovered materials instead of their labor power to industries, garbage dumps should not be conceptualized as factories, but as "urban commons." He characterizes scavengers as "urban gather-hunters engaged in a peasant form of production". Some more recent examples in this body of literature include Fahmi and Sutton's (2006) study about garbage recyclers in Cairo and Gutberlet's (2008) analysis of recyclers' communities in Sao Paulo.

The conceptualization of waste economies proposed by scholars in this impressive body of literature nevertheless has two shortcomings that I would like to explore here. First, in the waste economies discussed in the aforementioned

studies about scavenging and recycling, there are only labor processes, no networks. Empirical research on scavenging and recycling in developing countries focuses either on a particular place (e.g., garbage dumps) or on a particular type of labor (e.g., scavenging or waste sorting). There is insufficient attention paid to how the place or labor under examination is connected to other actors (e.g., consumers and manufacturers who use waste as inputs), who are often located in other places. In other words, the waste economies described in this body of literature are not sufficiently geographical. Second, discussions about how waste economies (i.e., waste sectors) come into being are also unsatisfactory. The aforementioned scholarship regards waste as materials that possess unrealized values. This concept implies that there are certain historical processes that make the value of certain things unrecognizable and that, thus, turn these things into waste. In this respect, the concept of waste that underlies this body of literature is remarkably similar to Mary Douglas' notion of waste as matter out of place. Unfortunately, in this body of literature, there is little, if any, discussion about the historical processes that turn stuff into waste.

The challenge that lies in front of the present study therefore is this: How can I provide a perspective on Beijing's demolition waste that can address both the geography of material flow and the historical processes that turn used building materials into waste? My answer rests on the commodity chain approach.

The commodity chain approach has been a popular form of analysis in economic geography. Originally, practitioners of this approach aimed to de-fetishize commodities by exposing the connections between spatially distinctive yet temporally coincident activities that link consumers with far-away producers. In recent years, this approach has been applied and developed in relation to a range of commodities, from apparel, fast food, and computers to cut flowers, French beans, and milk (Gereffi, 1999; Fields, 2004; Ziegler, 2007; Schlosser, 2002; Freidberg, 2004; DuPuis, 2002; Rivoli, 2009). Although focusing on very different products, these studies on the "geographical lives of commodities" (Castree, 2001) all track back through the assembling of a pre-figured point of sale. Analysis therefore is conducted along supply chains connecting networks of producers, buyers, technicians, product designers, retailers, and consumers to one another.

The commodity chain approach provides a promising tool for the study of Beijing's demolition waste for the following two reasons. First, its focus on networks allows me to discuss how actors in different places are connected with each other through used building materials. It therefore helps me to delineate an economy of waste that is geographical in its own nature. Second, this approach helps me address historical processes. By joining two distinctive types of material chains (one belonging to the socialist period and the other to the post-socialist

period), I can show that the demotion of demolition waste from a type of resource to “garbage” in official discourse has helped form a network of businesses that is geographically distinctive from the one that existed in the socialist period.

The ambition of the present study, however, goes beyond the intention of introducing an alternative approach to the study of waste. This study also aims to show that a focus on waste helps us re-evaluate some of the assumptions in the literature of economic geography. Economic geographers’ growing interest in commodity chain analysis seldom extends beyond the point of consumption. The back-end of the value chain, or the waste stream, is often ignored. Economic geography, outfitted with the commodity chain approach, could have shed much light on the study of waste. Unfortunately, in ignoring the back-end of the value chain, this field of research has not been able to develop a more critical understanding of waste.

The present study discusses how a particular type of waste—demolished buildings—travels from the point of consumption back to the realm of production and to the final destination of disposal. I find that, first of all, the labor process of un-building (i.e., tearing buildings apart, removing the rubble, and disposing of it) opens up significant “commodity potentials” (Kopytoff, 1988) of used building materials; it gives the materials a second life. Second, the value of used building materials opens up profit-making opportunities. As the later chapters will show, in the reform period, the utilization of demolition waste by the periphery has encouraged demolition companies to engage in the collection of used building materials and given rise to the emergence of recycling companies, who make a profit from offering spaces for waste sorting. Third, because waste recovery is profitable, property owners are able to demand rents from businesses such as demolition companies and recycling companies. All these three highlighted findings point to the fact that activities that take place at the back-end of the value chain can be just as productive as activities that require putting things together into a product.

The Political Ecology of Urbanization

In focusing on the afterlives of demolished buildings in postwar Beijing, this study examines an aspect of urban landscapes that is often ignored by urban geographers: the materiality of urbanization. In this section, I discuss how the recent scholarship on urban political ecology has informed the current study, and how the current study contributes to this emerging body of literature.(nice job 😊)

One exciting development in the field of urban geography in the past decade has been the emergence of the literature of urban political ecology. Urban political ecologists refuse to conceptualize the city as antithetical to nature.

Instead, they aim to “untangle the interconnected economic, political, social and ecological processes that together go to form highly uneven and deeply unjust urban landscapes” (Swyngedouw *et al.*, 2003, p. 901). Throughout the years, two broad areas of inquiry have been established in this subfield. The first is the urbanization of nature. Here, scholars examine how the metabolic flow of materials shape urban politics. Kaika’s (2003) study about the politics of water scarcity in Athens and Marvin and Medd’s (2006) analysis of the flow of fat in urban sewers are two noticeable examples. The second area of inquiry is the production of urban nature and its politics. Scholars ask how the material conditions that comprise urban environments are controlled and manipulated in the service of elite agents’ interests at the expense of marginalized populations. Noticeable case studies in this area include the study by Robins and Sharp (2003) about the link between the development of the chemical industry and the construction of lawn-based suburbia in the United States, Mathew Gandy’s (2003) study about the construction of Central Park and urban parkways in New York City, Richard Walker’s (2009) study about the greening of the San Francisco Bay Area, and Rademacher’s (2011) analysis of river restoration in Kathmandu. Urban political ecology literature helps us recognize that urbanization is inevitably a material process. Such a process contributes to the uneven geography of modern capitalism.

In the literature of urban political ecology, little attention is paid to the output side of the urban metabolism. Most scholarships focus on the input of such materials as water, energy, and construction supplies. The present study was carried out with an aim to fill this gap. Furthermore, in the current literature, one finds insufficient discussions about the roles of marginalized groups in urban ecological transformation. Most of the active players identified by scholars are the socially privileged, such as corporations, states, and property owners. The socially marginalized are typically painted as the victims of certain social-ecological processes. Two of the few scholars to give a voice to marginalized groups are Richard Walker and Mathew Gandy. In *The Country in the City* (2009), Walker discusses the emergence of “brown environmentalism”—environmental justice activism carried out by people of color—in the San Francisco Bay Area. He uses the case to show that the greening of the Bay Area is “a movement made up of a remarkable mixture of people and projects” (p. 12). Along a similar line, Gandy, in *Concrete and Clay: Reworking Nature in New York City* (2003), examines the grassroots organization of Latino and Hassidic residents in the Greenpoint-Williamsburg district in the early 1990s, which succeeded in halting construction of a waste incinerator on the Brooklyn Navy Yard site. Gandy points out that although their success offers a model for political action, it also led to the expansion of New York’s ecological frontier, including the use of landfills along

the northern seaboard from New Hampshire to Virginia. For Walker and Gandy, then, marginalized groups can shape urban ecological transformation through certain forms of social progressivism. Although these actions sometimes have unintended consequences, their primary goal is to counter the capitalist production of urban nature, which is socially repressive and environmentally unjust.

This study tells the story of a particular set of socially marginalized groups—villages and towns surrounding the city of Beijing—and how these groups have come to shape urban ecological transformation. I will discuss, in the next section, what qualifies villages and towns in China’s urban periphery as “socially marginalized groups.” Here, I should point out that, like Walker and Gandy, I recognize the agency of the socially marginalized. I believe that we cannot understand the geography of waste in China unless we place the periphery at the center of our investigation. However, unlike them, I do not think that social progressivism can define the agency of the marginalized. Villages and towns in peripheral Beijing consume waste in order to improve their position in the market economy, not to defy its logic. Furthermore, their consumption practices make waste recovery lucrative and, thus, open up a whole new arena for the accumulation of capital.

Urban-Rural Relations in Post-Mao China

Yasheng Huang, in *Capitalism with Chinese Characteristics: Entrepreneurship and the State* (2008), argues that the political economy of development in reform China has been shaped by a political balance between two Chinas: the entrepreneurial, market-driven rural China and the state-led urban China. In the 1980s, he points out, policymakers in the central government supported rural financial reforms, which led to substantial growth of township and village enterprises (TVEs) in even the country’s poorest or most agricultural provinces and regions. During this time, according to Huang, “Chinese capitalism [was] entrepreneurial, politically independent, and vibrantly competitive in its conduct and virtuous in its effects” (p. xvi). In the early 1990s, however, things began to change. As urban-based industrial technocrats came to power in the aftermath of the Tiananmen crackdown, policymakers grew more favorable of cities in terms of investment and credit allocations. The state taxed the rural sector heavily in order to finance the state-led urban boom. Huang finds few positive results in this urban orientation: “When and where urban China has the upper hand, Chinese capitalism tends toward political dependency on the state and is corrupt” (ibid.).

Huang’s thesis of a “great reversal” highlights the growing antagonism and inequality between the countryside and the city. While the Chinese economy as a

whole has enjoyed an average of 8% annual GDP growth in the past three decades, the countryside has been plagued by stagnation, surging illiteracy rates, and declining health. He argues that underdevelopment in the countryside has provided conditions helpful for the development of state-led and urban-biased capitalism. Huang's narrative nevertheless is overly urban-centric. In his story, the rural sector simply disappears after the structural transformation of China's economy in the 1990s. He did not address the more challenging question of how rural China has responded to expanding urban power.

Two bodies of literature concerning contemporary China provide more sophisticated analyses of the urban-rural dynamics in the reform era. The first body of literature comprises studies about urban villages. Urban villages, or *chengzhongcun*, are former rural villages that lost their farmlands owing to land requisition by urban governments. Most of these villages are located at cities' edges; many are encircled by newly developed residential or commercial complexes. Urban village literature concerns the political-economic and historical processes that give rise to unique spatial phenomena (Li, 2004; Zhang, 2002), the importance of ancestral lineage in the organization of these urbanized villages (Lan, 2005; Siu, 2007), and their pivotal role in the development of the post-Mao urban economy (Liu et al., 2010). Scholarship in this field shows that these villages cultivate their resources by using both improved locational advantages (as cities continually encroach on these villages) and ownership of the remaining village lands; and in so doing, these villages manage to constitute a counterforce against urbanized state power. In other words, the countryside has benefited itself by skillfully exploiting the opportunities derived from urban expansion. The scope of the analysis provided by the urban village literature, however, is limited. Villages at the urban fringes constitute only a small part of rural China. We do not know how villages and towns located in the more remote countryside relate to their corresponding cities.

A second body of literature concerning contemporary China can help clarify the changing relationships between urban centers and their rural surroundings: the scholarship on land commodification. In 1989, China established the urban land leasehold market. Under this new land system, although all urban lands remain the state's properties, their "use rights" can be sold in the market for a fixed period of time. Literature about land commodification examines how the creation of the urban land leasehold market has transformed the Chinese state and its relationship to society. One important observation made by scholars in this field is that land commodification has created a new power dynamic within the Chinese state. In *The Great Urban Transformation* (2010), for example, You-tien Hsing highlights the growing power of municipalities. By establishing control over centrally located urban lands and by grabbing the lands of rural collectives

(i.e., urban villages) at cities' edges, municipalities have become the main beneficiary of land markets. Within the Chinese state, one group of actors that benefits the least from the urban land market is rural areas' township governments, which also constitute the lowest level of the state hierarchy. Township governments have control only over rural lands, which, by law, may not be put up for sale. In order to enhance streams of revenue, township governments often carry out informal land-development projects, such as the construction of factories or residential and commercial complexes on land designated for farming. In the land commodification literature, then, the power dynamics between cities and the countryside are treated as a function of their respective capacity to establish control over land. This leaves one to wonder what the other variables are in the equation.

The present study explores urban–rural relations in contemporary China through the lens of urban metabolism. Although, as mentioned in the previous section, questions about the flows of materials in and out of cities have been explored in the contexts of American and western European cities, they have received little attention from scholars in China studies. The geography of demolition waste in Beijing reveals that rural China's reaction to urban domination has been far more vigorous than previously described. To open up opportunities for growth, the countryside has done much more than either wait for its locational advantages to improve (as has been the case with urban villages) or establish control over existing assets (i.e., rural land)—the countryside has actively appropriated resources (i.e., used building materials) from cities. For state-led urban China, this symbiotic relationship with the countryside has had both positive and negative effects. On the one hand, the use of waste by the periphery has greatly reduced the cost of waste management. On the other hand, however, the countryside has remained an important player in marketplaces by using waste as a resource. Urban China's project of subjugating the countryside has never reached a point of completion.

Methodology

The major source of information used in this dissertation is my field research conducted in Beijing between 2009 and 2011. More specifically, my fieldwork was conducted in the following periods of time: January–February, June–July, and October–December in 2009; March–May in 2010; June–July in 2011. The total time I spent in the field was about 12 months. I conducted 47 interviews with people involved in the collection, sorting, reuse, recycling and disposal of demolition waste. Interviewees included demolition workers, demolition project contractors, staff in relocation companies, relocation

households in urban villages, recyclers in recycling stations, managers of recycling companies, and debris truckers. Most interviews lasted one to three hours; some had follow-up interviews. The fieldwork also included a dozen field trips to demolition sites, recycling stations, to-be-demolished villages, steel mills in Tangshan (Hebei), plastic-recycling workshops in Wenan (Hebei), and debris dumps. Lastly, I spent a total of one month in the Beijing Municipal Archive to collect official documents related to the study.

Outline of Chapters

Chapter 1 examines the relationships between demolition waste and Beijing officials since the founding of the People's Republic of China (PRC) in 1949. The chapter shows that during the 1980s, there was a profound change in how Beijing officials perceived demolition waste. In the socialist period, facing the problem of material shortages, officials in Beijing regarded demolition waste as a resource. They not only actively engaged in organizing the collection of waste materials, but also implemented laws and policies that forbade the unauthorized collection and sale of demolition waste. This regime channeled demolition waste to state enterprises and agencies in cities, where state actors used the materials to build industrial bases and public urban projects. In other words, demolition waste stayed in the urban center and contributed to the modernization of Beijing. The fiscal reforms of the Chinese state in the 1980s pushed local governments to shift their focus away from resource redistribution to the creation of economic growth. Demolition waste became less and less valuable in the eyes of Beijing officials. The 1980s therefore witnessed the demotion of demolition waste from “demolition materials” to “building garbage” in official discourse. The view wherein demolition waste is a cost of development has had, as it turns out, a rather short history.

Chapter 2 through Chapter 4 provide a detailed account of the geography of Beijing's demolition waste in the reform period. The overarching argument in these chapters is that demolition waste has facilitated the development of northern China's rural economy. Chapter 2 examines the materials typically reused: bricks, tiles, windows, doors, and floor plates. The major consumer of this group of materials is the property owner in to-be-demolished villages on Beijing's fringes. Property owners in these villages use the aforementioned materials to create new housing. Through such a practice, known as *tuji jianfang*, they are able to negotiate better compensation for relocation deals with the municipal government. In other words, reused materials have mediated the expansion of the city of Beijing. This chapter also follows the reused materials back to their point of origin: demolition sites. It shows just how profitable reused materials can be,

insofar as used bricks, used tiles, and the like can be put up for sale. Demolition companies actively engage in material salvaging. They are *de facto* the miners of building waste. Moreover, owners of to-be-demolished properties are able to charge demolition companies for access to demolition waste. Thus, demolition companies oftentimes work for free for land developers, or pay developers for the right to demolish a building. In other words, to-be-demolished properties are assets in today's China.

Chapter 3 looks at recycled materials: scrap metal, plastic, glass, insulation foam board, and rubber. The major consumers of these materials are township and village enterprises in Hebei, a province that encircles the Beijing Municipality. I use the case of steel mills in Tangshan to show that by using recyclables as industrial inputs, Hebei TVEs have created a competitive edge in an economy where state-owned enterprises control access to raw materials. The recyclables therefore contribute to the development of industries in rural areas. Furthermore, this chapter follows the recyclables to recycling stations. I show that because of Hebei TVEs' demand for recyclables, waste sorting, the labor process that transforms waste materials into industrial inputs, has become a vibrant part of Beijing's urban economy. In the city, a group of businesses called "recycling companies" has emerged. These companies have established "recycling stations" (*feipin huishou zhan*), or marketplaces for sorted recyclables, in the city's fringe areas. They make a profit by leasing out scrap yards in these stations to recyclers. The recyclers, most of whom are rural migrants, purchase recyclables from the city, conduct waste sorting, and sell sorted materials to TVEs in Hebei. The emergence of this waste-sorting economy has greatly benefited urban villages located on the city's fringes. By leasing out village lands to recycling companies to build up recycling stations, these villages can strengthen their streams of income.

Chapter 4 examines debris, or materials that demolition companies do not find worthwhile collecting. Most of the rural villages that now serve as Beijing's debris dumps—whether legally or illegally—were originally the city's sand and gravel mining grounds. In the early 2000s, under tremendous pressure to improve the city's air quality before the 2008 Beijing Olympics, the municipal government initiated a restructuring of the city's sand and gravel mining industry. In response, the affected villages turned quarries into debris dumps. By doing so, they were able to impose dumping fees on debris truckers and, thus, to continue their participation in the city's real estate boom. In other words, even debris, which has no market value, has been productive. It has mitigated the negative effects of rising environmentalism on the municipality's rural areas.

CHAPTER 1 THE TERMINATION OF STATE BUILDING RECYCLING

The relationship between governmental officials in Beijing and demolition waste changed considerably during the 1980s. In the socialist period (1949-1978), shortages in construction materials prompted officials and party cadres in Beijing to regard demolition waste as a resource. Government organizations and state enterprises in the capital city not only actively engaged in the recovery of demolition waste, but also forbade the unauthorized collection and sale of the materials. Under such a regime of state building recycling, much demolition waste was put to use in the construction of the city's new industrial bases and public urban projects. The fiscal reforms of the Chinese state during the 1980s changed Beijing officials' attitude toward demolition waste. As the responsibility of meeting production targets and redistributive goals set by higher-level government entities ceased to be a primary concern of local governments, Beijing officials became less and less interested in the collection and allocation of demolition waste. The 1980s therefore witnessed the demotion of demolition waste in official discourse, from "demolition materials" (*chaichu cailiao*) to "building garbage" (*jianzhu laji*). In official documents about demolition waste, this discursive transformation was accompanied by the appearance of the subject of "urban environments" (*shirong huanjing*). Since then, Beijing officials have been exhibiting a high degree of concern about environmental issues such as dust pollution on demolition sites and the disposal of debris; without question, these issues would have sounded peculiar to socialist officials. The imperative of conceptualizing demolition waste as an environmental problem is thus a post-socialist mentality.

This chapter, first of all, provides an explanation for why in the reform period villages and towns surrounding Beijing could appropriate demolition waste from the city. It is certainly true that the commodification of land in the reform era boosted the volume of demolition waste in Beijing. Increases in quantity, however, did not necessarily lead to accessibility. During the 1950s, as this chapter shows, the modernization of Beijing led to large-scale urban demolition. However, because demolition waste was under the control of the state, it was not accessible to non-state actors. This chapter argues that demolition waste became accessible in the reform period because the fiscal reform of the state made the materials less valuable to the state. The periphery's ability to appropriate demolition waste from the city has to be understood in the context of post-socialist transformation.

Second, this chapter serves as a point of comparison for the upcoming three chapters, which chart the geography of demolition waste in the era of market reform. Under socialism, as this chapter shows, governments and state enterprises

in Beijing were the main consumers of demolition waste. Demolition waste thus stayed in the city's urban center. After the debut of economic reform, villages and towns surrounding Beijing became the main consumers of demolition waste. Demolition waste thus ended up in peripheral locations. In other words, during the past thirty years, there has been a profound shift in the geography of demolition-waste consumption.

1.1 Demolition Waste and the State in the Socialist Period (1949–1978)

Soon after the People's Republic of China was established in 1949, the issue of precisely where to place the new nation's administrative center in Beijing triggered an intense debate among urban-planning professionals. Preservation-minded architect Liang Sicheng and urban designer Chen Zhanxiang, who were the vice chair and the program director of the Beijing Urban Planning Commission respectively, proposed to place the new administrative center in Beijing's suburb of Sanlihe, which was about 1.5 km west of the existing walled urban center. The rationale of the proposal, according to their *Proposal for the Location of the Central Administrative District* (1950),⁷ was to reduce population density of the old city while protecting Beijing's existing urban fabric. Liang and Chen also pointed out that placing the new administrative center in the suburbs would be less costly, as the government would not need to relocate residents. On the other side of the debate was a group of planning advisors from the Soviet Union, who proposed to place the administration at the city's traditional urban center: Tiananmen Square. The team, led by architect M. G. Barannikov and former Moscow vice mayor P. V. Abramov, reasoned as follows:

*Tiananmen Square has become all the more important as a venue for the military parades and mass demonstrations that took place during the ceremonies commemorating the establishment of the People's Republic of China. Because of this, Tiananmen Square should be made the center of the capital. By doing so, the directions of the city's main roads can be determined. No city planners should deviate from this principle.*⁸

Drawing from the Soviet experience, these foreign advisors further pointed out that placing the administrative center at Tiananmen Square would be more cost-efficient, as the government bureaus' agencies could take advantage of the public

⁷ For a detailed description of the proposal, see Wang (2011), Chapter 3.

⁸ See "Soviet Expert Barannikove's Report on Beijing's Development." In Zhang *et al.* (1995).

facilities and urban services already in place in the city. “Demolition of old buildings and relocation of residents,” they calculated, “would account for no more than 25%-30% of the total construction cost” (Ibid).

In the summer of 1953, Beijing mayor Peng Zhen attended a meeting headed by Mao Zedong, who was the chairperson of the Chinese Communist Party (CCP). Mao instructed Peng that “important governmental organs should be placed in the old city, while organs of less importance can be put in new urban areas outside the City Wall” (Wang 2011: p. 175) In the November of 1953, the Beijing Municipal Commission revealed its *Guidelines for the Reconstruction and Expansion of Beijing City*, which designated the Tiananmen Square area as the seat of the Central Government. The *Guidelines* formally put an end to the debate, and a large number of redevelopment projects began to break ground in the old urban center of Beijing.

This section of the current chapter traces the afterlives of two sets of buildings demolished in Beijing during this period of urban reconstruction: decorated archways (*pailou*) and the City Wall. My purpose here is to map the geography of demolition waste in the socialist period. The afterlives of *pailou* and the City Wall reveal the existence of a “regime of state-directed building recycling,” by which I refer to a set of governmental practices and institutions that created a state monopoly over demolition waste and used the materials for the fulfillment of state goals. This particular “waste regime” (Gille, 2010) emerged in a context of material shortages that compelled Beijing officials to regard demolition waste as a resource. In fact, socialist officials used terms such as “demolition materials” (*chaichu cailiao*) and “old building materials from demolition” (*chaichu jiliao*) to refer to demolition waste; the term “building garbage” (*jianzhu laji*), which is the present term for demolition waste in China, would have sounded foreign to socialist officials. Under the regime of state-directed building recycling, demolition waste ended up in the hands of state bureaus and enterprises in Beijing. These state actors used the materials to construct industrial bases and public urban projects. During the socialist period, therefore, demolition waste stayed in the urban center of Beijing and contributed to the modernization of the city.

Decorated Archways (Pailou)

Decorated archways, or *pailou*, are two- or three-story gate structures erected to commemorate the achievements of ancestors (Figure 1.1). They are located at intersections of major boulevards, at entrances to ceremonial sites, or at public gathering places, such as temples, marketplaces, and parks. Those *pailou* sitting at intersections are often referred to as “street *pailou*” (*kuajie pailou*). By

the time of the PRC's founding, there were about a hundred *pailou* in Beijing. Twenty-nine of them were street *pailou*. Most of these street *pailou* were wood structures, and some larger ones had been built with stone bases and glazed-tile roofs. In 1951, the municipal government initiated a series of renovation projects to preserve street *pailou* in Beijing. These renovation projects, however, were put to an abrupt stop in 1952.

In May 1952, the Division of Traffic Control (DTC) of the Public Safety Bureau proposed to remove all street *pailou* from intersections.⁹ It reasoned that because *pailou* blocked the views of car drivers, they had become hot spots for traffic accidents. The DTC's proposal raised much opposition from some preservation-minded officials, such as the vice chair of the Urban Planning Commission, Liang Sicheng. The preservationists argued that the safety issue could be easily solved by constructing traffic islands around *pailou* or by putting up speed-limit signs at intersections. The preservationists, however, were not able to win the needed support in the government. In a meeting with Premier Zhou Enlai, who at that time had the final say over municipal affairs in Beijing, Liang Sicheng tried to convince the premier that *pailou* were important cultural assets of the city. He explained to the premier that when the sunset shed its light on the Jingde Jie Pailou (which was the first scheduled to be demolished), it was one of the most enchanting scenes that one could encounter in the capital city. Zhou Enlai, however, exhibited indifference to Liang's passion for these ancient structures, replying to Liang with a line from the famous ancient Chinese poem *The Leyou Plateau*: "The setting sun is glorious to see. Pity it's so close to the night" (*xiyang wuxian hao, zhishi jin huanghun*) (Lin, 1996).

In January 1954, the municipal government began to remove street *pailou* from intersections. The first *pailou* to be dismantled was Jinde Jie Pailou, and the project took about 2 weeks to complete. In the following two years, 24 street *pailou* were disassembled. The only street *pailou* that escaped demolition were the four that sat along Chengxian Street, itself located in front of the city's Confucian Temple. At that time, as a way of showing respect, people would dismount horses or vehicles before entering the street. The four *pailou* along Chengxian Street escaped demolition probably because pedestrians constituted the main component of the street's traffic.

⁹ Wang (2011) provides a detailed account for *pailou* removal projects in Beijing in the 1950s. See Chapter 6.



Figure 2.1 East Changan Pailou in 1952. (Beijing Municipal Institute of City Planning and Design, 1996.)

Most *pailou*-removal projects were carried out by the Construction Bureau, the Bureau of Parks and Forestry (BPF), or these two agencies working in unison. The Construction Bureau was responsible for public works. Road construction and maintenance was one of its duties. The BPF managed the city's parks and street plantings. It was involved in some *pailou*-removal projects because the municipal government put it in charge of the materials salvaged from dismantled *pailou*. Existing official documents reveal that registering wood pieces from demolished *pailou* was part of the work of the *pailou*-removal crews. On April 16, 1958, for example, the Beijing Road Equipment Company (an enterprise owned by the Construction Bureau) handed over a large stockpile of wood pieces to the BPF.¹⁰ These pieces had been collected from a number of old structures that the company had demolished in previous years, including a gate building in Beihai Park and thirteen street *pailou*. The company and the BPF signed a material transfer list to complete the handover (Figure 1.2). From this list, we can see that this stockpile of transferred materials included 812 pieces of wood from demolished street *pailou* (along with 42 wood pieces from the demolished gate building in Beihai Park). These wood pieces were recorded with detailed dimensional information. Another example of this type of task is evident in the BPF's documentation of materials

¹⁰ Beijing Municipal Archive, 098-001-00395.

拆修古建筑木料核算单 第1页(共2页)

品名	规格	单位	数量	备注
大木	10x12x400	根	11	火海三承的
才木	30x30x460	根	11	
"	20x40x490	"	1	
"	30x45x460	"	1	
"	30x30x460	"	1	
"	40x40x460	"	1	
"	30x45x460	"	1	
"	30x30x460	"	1	
"	30x45x460	"	1	
"	20x30x300	"	1	
"	25x40x300	"	1	
"	25x30x400	"	1	
"	25x30x460	"	1	
"	25x25x400	"	2	
"	20x30x400	"	1	
"	20x30x400	"	2	
"	20x30x560	"	1	
"	18x15x470	"	1	
"	16x25x350	"	1	
"	12x25x470	"	2	
"	17x26x460	"	1	
"	15x30x350	"	6	
"	17x25x460	"	1	
元槽	24x40	"	12	四面四槽

第2页(共2页)

品名	规格	单位	数量	备注
元槽	20x40	根	10	东西四槽
木条	20x40	"	18	"
椽子	35x100	"	780	"
椽	22x700	"	2	全数
长椽	8x40x1700	块	2	"
"	8x31x700	"	2	"
元柱	25x1000	根	3	四面四柱
"	25x600	"	2	"
"	24x400	"	2	带三角椽
交接	18x500	"	4	东面交接
"	18x400	"	5	"

移交单位 北京市道路器材公司
接收单位 北京市园林局
1958年4月16日

Figure 1.3 A material-transfer list signed by the Beijing Road Equipment Company and the Bureau of Parks and Forestry on April 16, 1958. (Beijing Municipal Archive, 098-001-00395.)

高毅斋牌楼两座石料材料 (7件附后三张图)

1. 2.4x0.4x600 铁杆 8根 四根木心 积铁杆和
白根 下铁杆

2. 2.0x0.4x390 铁杆 8根 铁杆木心

3. 2.0x0.4x500 铁杆 4根

4. 2.0x0.4x600 铁杆 16根

5. 铁杆 铁杆 16根 500 无字板

6. 铁杆 铁杆 16根 500

7. 铁杆 铁杆 16根 500

1. 铁杆 铁杆 16根 500

2. 铁杆 铁杆 16根 500

3. 铁杆 铁杆 16根 500

北京道路器材公司
1957.3

Figure 1.4 A list of materials salvaged from the Dagaodian Pailou. (Beijing Municipal Archive, 098-001-00313)

collected from the Dagaodian Pailou (Figure 1.3).¹¹ According to this registry, the BPF salvaged wood beams, tiles, metals, and small pieces of wooden joint components from the Dagaodian Pailou.

The fact that these registries existed is interesting. They reveal that Beijing's municipal government committed resources to documenting the materials salvaged from demolished *pailou*. Such a practice of keeping track of demolition waste, as the next section will show, is something that officials in reform Beijing would not have bothered to do. By contrast, Beijing officials shortly after the establishment of the PRC regarded demolition waste as an important resource. But what factors help explain socialist officials' perception of demolition waste as a resource?

Cultural preservation was no doubt one of the reasons behind the creation of these registries. Take, for example, Jingde Jie Pailou, which was considered by many contemporaries to be one of the most valuable cultural monuments in the city of Beijing. After carrying out the demolition of this *pailou*, the Construction Bureau received a request from the Department of Culture (an agency of the central government): the bureau should create a registry for salvaged materials and keep the materials in a safe place.¹² Officials in the Department of Culture had hoped to reconstruct the *pailou* soon in another location. However, in most of the other cases, material conservation, rather than cultural preservation, was officials' main concern. In a letter that the BPF sent to the Bureau of Real Estate in 1957, for instance, the BPF clearly stated that it intended to use the wood pieces from the Dagaodian Pailou to renovate historical landmarks under its jurisdiction.¹³

Beijing's municipal government put the BPF in charge of the materials collected from demolished *pailou*. Most of the materials were therefore handed over to the BPF. The BPF had been established at some point in the 1950s by the municipal government to manage the city's parks and street plantings. Although it was not the first time that Beijing had established an independent administration for parks, the bureau assumed far more responsibilities than had its predecessors. In 1956, the municipal government announced the *City Greening Plan*. According to this plan, the city would start to carry out four types of green-space projects: municipal parks, district parks, neighborhood parks, and street plantings. It was the first time that open spaces had been singled out as an independent subject of urban planning in Beijing. The city's municipal government put the BPF in charge of the implementation of the *City Greening Plan*, and the BPF used materials salvaged from dismantled *pailou* to fulfill its responsibility.

¹¹ Beijing Municipal Archive, 098-001-00313.

¹² Beijing Municipal Archive, 002-005-00150.

¹³ Beijing Municipal Archive, 098-001-00313.

The BPF used salvaged materials from demolished *pailou* to renovate existing parks and to construct new ones. Materials salvaged from the Dagaodian Pailou, for instance, were used to repair the Hall of Ten Thousand Buddhas in Beihai Park, the Hall of Prayer in the Temple of Heaven Park, and Mahavira Hall and the Pagoda of a Thousand Buddhas in Jietai Temple.¹⁴ The East Changan Pailou and the West Changan Pailou were reconstructed at the entrance of Taoranting Park, which was the first new municipal park constructed in Beijing after the PRC's founding.

The *City Greening Plan* was carried out to demonstrate to urban residents that the CCP, which had its power base in the countryside, could modernize cities. Used by the BPF for implementing the *Plan*, wood pieces collected from dismantled *pailou* became a part of this legitimization process. In the chapter's following section, I use the case of the reconstruction of the East Changan Pailou and the West Changan Pailou in Taoranting Park to elaborate on this point. Opened in 1952, Taoranting Park was the first urban park that the socialist government ever established in the city of Beijing. It covered an area of 146 acres, of which 17 acres were open water. The main attraction of the park was—and remains—the Cibei Nunnery, which sat on an island located at the center of the park. The nunnery was built during the Yuan Dynasty (1271-1368) and was one of the oldest religious establishments in the city. The creation of Taoranting Park was the result of careful political consideration. Back in the 1920s, the CCP's first generation of leaders—Li Dazhao, Zhou Enlai, and Mao Zedong—regularly gathered at the Cibei Nunnery to hold underground party meetings. By designating the nunnery and the surrounding area as an urban park, the CCP showed that the party had a long-standing connection with the capital city.

The East Changan Pailou and the West Changan Pailou were reconstructed in Taoranting Park in 1954 (Figure 1.4). These two *pailou* originally sat on Changan Boulevard, which ran through the north side of Tiananmen Square, but were dismantled in August 1954. The BPF put these two *pailou* at the southern entrance of the park, which controlled the only access to Cibei Nunnery.

The reconstruction of the East Changan Pailou and the West Changan Pailou in Taoranting Park functioned not to preserve a piece of the city's history, but to demonstrate the CCP's ability to improve the city. In 1958, the Beijing Publishing Co. published *Taoranting*, a booklet that introduced the history of the park and its main attractions. In this booklet, the author Han Jiang wrote:

¹⁴ Ibid.

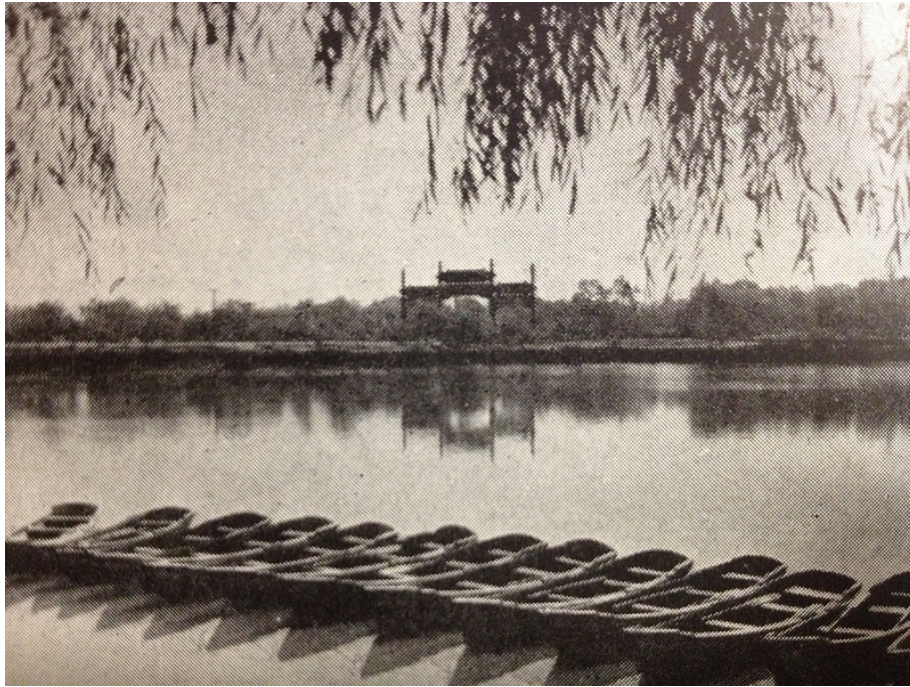


Figure 1.4 Reconstructed East Changan Pailou in Taoranting Park. (Han, 1958)

These two pailou used to be two pieces of junk on Changan Boulevard, blocking the traffic to Tiananmen Square. Since their relocation to the park, they have begun a totally new life. They now greet park visitors every day, and have become a favorite spot in the park. (P. 3)

Han Jiang provided no history for the *pailou* before their relocations. Instead, his point of emphasis was that the relocation project had brought new lives to these two *pailou*. The implication of Han Jiang's assertions was that socialism had brought significant progress to the city of Beijing.

The City Wall

The City Wall was a 38-kilometer-long defensive structure that used to encircle the entire city of Beijing. It comprised two parts: the Inner Wall and the Outer Wall (Figure 1.5). The Inner Wall, encompassing the Inner City, was constructed between the 13th and 15th centuries. It was 24 kilometers long, between 12 and 15 meters tall, and 20 meters thick at ground level. The Outer Wall, encompassing the “Outer City,” was built during the 16th century. It was 14

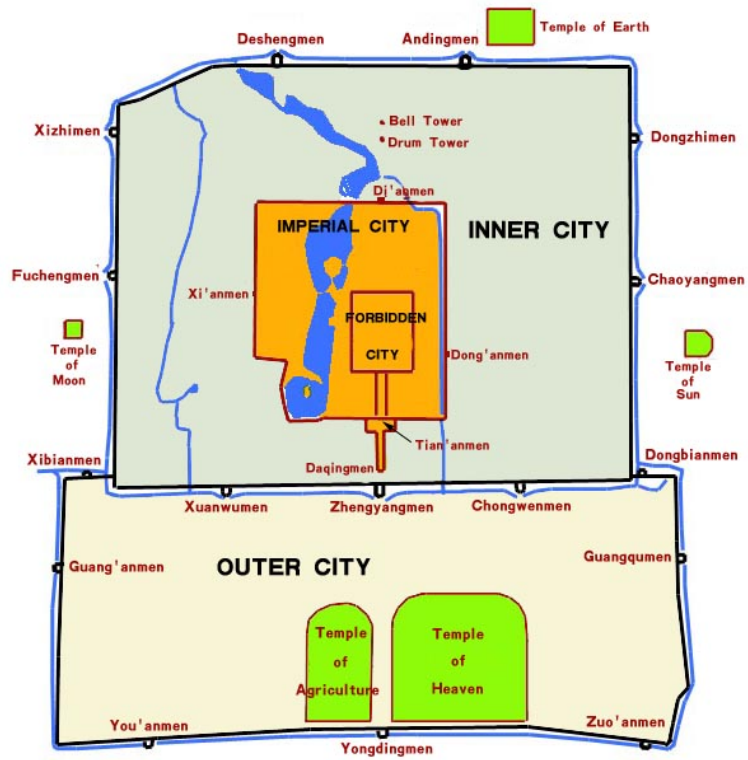


Figure 1.5 The layout of Beijing's City Wall.



Figure 1.6 Zhengyang Gate in 1915. (Tsinghua University, Architecture Archive.)

kilometers long, 8 meters tall, and 12 meters thick at ground level. Along the City Wall there were 15 gate towers, which controlled the incoming traffic to the city (Figure 1.6). Often 30 meters tall, these gate towers were made of wood, stone, and glazed tile. After the establishment of the PRC in 1949, the municipal government put the Urban Planning Commission (UPC) in charge of the City Wall.

Throughout the 1950s and early 1960s, the City Wall was *de facto* the city's mining ground for building materials. Between 1954 and 1959, for instance, the Urban Planning Commission received no fewer than twenty-one requests from state agencies and work units for permission to excavate wall materials.¹⁵ In one of these requests, the Ministry of Railway complained that difficulties in acquiring stone pieces and proper earthwork in Beijing had seriously delayed a project to expand the Guanganmen Railway Station. The ministry thus asked the UPC for permission to tear apart a segment of the City Wall (approximately 2,000 meters) located adjacent to the railway station. "It can provide us," the ministry elaborated, "4,500 cubic meters of stone bricks and 132,000 cubic meters of earthwork".¹⁶ There were also many cases of unauthorized wall excavation. In a notice sent by the Beijing People's Committee in 1962, for example, it was stated, "Many urban residents, state agencies, enterprises, work units, and people from people's communes in rural areas come to excavate wall bricks and earthworks without approval. This has resulted in many cases of injuries and death." (Wang, 2007: pp. 169-170) The deconstruction of the City Wall during the 1950s and 1960s provides a vivid illustration for the problem of shortages in construction materials in the socialist period. Old building structures were taken apart by governments and state enterprises to acquire needed construction materials.

During the same period, there was an intense debate among Beijing officials over the issue of whether to demolish the City Wall. Proponents of wall demolition, including Beijing Mayor Peng Zhen, the UPC's chief civil engineer Hua Nanguai, and Political Consultative Conference Delegates Ye Gongchuo, Chen Gongpei, and Liu Dingwu, argued that the City Wall obstructed traffic and was an obstacle to urban development.¹⁷ They proposed tearing down the wall and turning the land where the wall was currently standing into an auto expressway. Opponents of the proposed wall demolition—including the vice chair of UPC Liang Sicheng, Tsinghua University architecture professor Wu Liangyong, vice

¹⁵ This number is calculated through the following archival documents: Beijing Municipal Archive 002-006-00222, 098-001-00249, 002-009-00156, and 131-001-00271.

¹⁶ Beijing Municipal Archive, 002-009-156.

¹⁷ Wang (2011) provides a detailed account for the debate over wall demolition during the 1950s. See pp. 319-455.

minister of the Department of Culture Zhen Zhenfeng, and the National People's Congress Member Yu Pingbo—held that the City Wall was an important cultural asset and should be preserved. Liang Sichen even proposed transforming the roof of the 24-kilometer Inner Wall into an urban park (Figure 1.7): “It will be the first elevated circular urban park in the world,” he explained.¹⁸

The debate over wall demolition did not lead to any binding conclusion until 1958, when Mao Zedong intervened. In January 1958, at a party meeting in Nanning, Mao expressed his view for the first time: “I do not feel comfortable seeing the houses in Beijing and Kaifeng.... Antiquities are not necessarily bad, but might not be too good either. To cry over the demolition of decorated archways and the drilling of holes in Beijing's city gates is a matter political in nature” (Wang, 2011: p. 333). A couple weeks later, at the 14th Supreme State Affairs meeting, Mao declared, “It is a good thing for Nanjing, Jinan, and Changsha to tear down their city walls. It would be better to tear down all the old houses in Beijing and Kaifeng and to replace them with new ones” (Wang, 2011: p. 334). Two months later, in March, at a meeting in Chengdu, Mao extended his views: “Beijing should learn from Tianjin and Shanghai in tearing down city walls” (ibid). This series of remarks made by Mao in 1958 put an end to the debate. The city government of Beijing then began preparations for wall demolition.

On March 13, 1959, the Beijing vice mayor Feng Jiping submitted *A Report on the Current Conditions of the City Wall and the Plan for Its Demolition* to the CCP's Beijing Municipal Committee.¹⁹ This report outlined the municipal government's plan to tear down the wall. The first part of the report described the current material conditions of the City Wall. It reported that after years of dismantlement since the PRC's founding, the Outer Wall had been, by and large, cleared away completely. Still, 23,060 meters of the Inner Wall remained intact. The city government estimated that this remaining portion of the City Wall contained 455,759 cubic meters of stone bricks and about 4,600,000 cubic meters of earthworks. The appendix of the current study contains a table presenting a breakdown of the numbers, from which it is clear that the northern and the southern portions of the Inner Wall contained the largest amounts of stone bricks and earthworks (Table 1.1).

The second part of the report laid out a plan for wall demolition. It proposed two phases of demolition. During the first phase, which was to be carried out in 1959, the city would pull down four wall segments extending from, respectively, Jianguo Gate to Dongzhi Gate, from Anding Gate to Xijiekou, from Xizhi Gate to Wuhao Huokou, and from Fucheng Gate to Wudingho. Altogether this phase would

¹⁸ Cited by Wang (2011): p. 136.

¹⁹ Beijing Municipal Archive, 131-001-00271

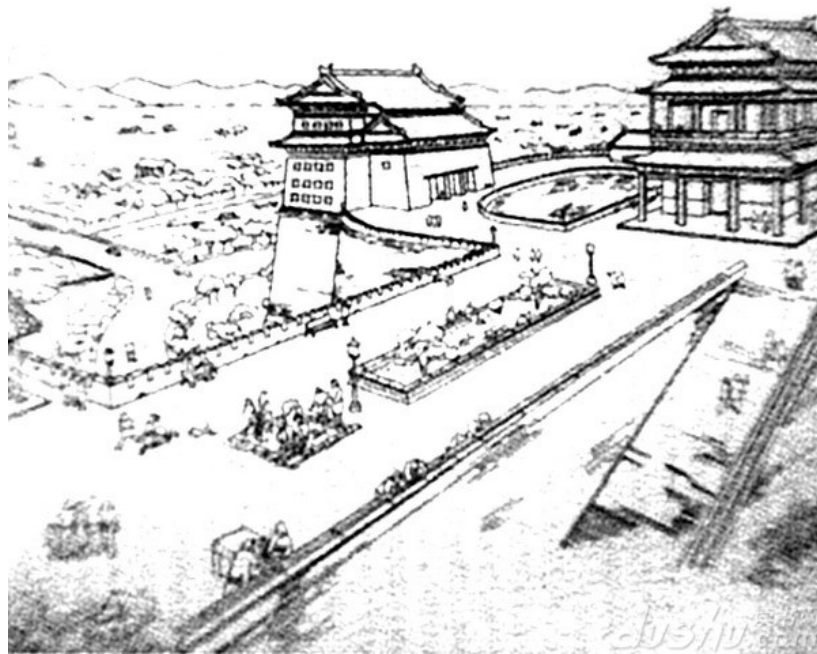


Figure 1.7 Liang Sicheng’s rendering for the proposed City Wall Park. (Liang, 1982)

	Length (meters)	Earthworks (cubic meters)	Stone Bricks (cubic meters)
Northern Portion	6,520	1,539,000	123,662
Eastern Portion	5,115	763,510	48,652
Western Portion	4,580	838,480	104,090
Southern Portion	6,575	1,406,500	179,355
Total	227,890	4,547,490	455,759

Table 1.1 An estimation of the material composition of the City Wall in 1959. (Beijing Municipal Archive, 131-001-00271)

dismantle 8,400 meters of the Inner Wall, and would clear up 73,000 cubic meters of stone bricks and 1,450,000 cubic meters of earthworks. During the second phase, which was to be carried out in 1960, the city would pull down the remaining wall segments. It would clear up 380,000 cubic meters of stone bricks and 3,000,000 cubic meters of earthworks. Furthermore, this part of the report outlined a plan for the organization of the labor force involved in the project. The

plan stated that every day the city would borrow 900 people from the People's Liberation Army and 1% of the labor force from work units within the Beijing Municipality. "Altogether we will have 5,100 workers each day. Based on the estimation that each person can excavate 1 cubic meter of earthwork each day, we can clear up 7,600 cubic meters of earthwork per day; that is 1,680,000 cubic meters of earthwork a year".

The last part of the report discussed material allocation arrangements. It stated that "bricks will be open to work units for excavation; priority will be given to agencies and enterprises that have urgent needs. As to soil from earthworks, we will use it to fill up pits in construction sites and to fill up non-functional irrigation ditches in the nearby suburbs; we will also use it in recent road and railroad construction projects. [If there is soil left,] we will use it to fill up ditches in rural areas." The appendix of the report provided a list of locations where the soil from the earthwork would be disposed of (Figure 1.8). According to this list, the eastern suburb would receive the largest quantity of earthworks: 3,340,000 cubic meters.

The first part of the report, which provided an estimation of the quantity of stone bricks and earthworks, reveals that the municipal government spent manpower on surveying the material composition of the City Wall. Municipal officials thus treated the Wall as if it were a gold mine. For them, wall demolition was not just about removing the structure, but also about appropriating important resources. The third part of the report, which discussed allocation arrangements for the wall materials, further suggests that municipal officials had a clear idea about how to put the wall materials to productive uses. Let me elaborate.

During the 1950s, there was a strong consensus among officials about the importance of transforming the city of Beijing from a "consumption city" to a "production city." The rationale was that only when the working class becomes the city's majority could Beijing live up to its name as the capital of socialist China. Mao's original idea was to build factories on the south side of the city. He imagined that one day a sea of smoke stacks would be visible to him from his reviewing stand at Tiananmen. His vision, however, proved to be unrealistic. The government could not afford to relocate households living in the city's south side. As a compromise, the municipal government decided to place industries in the eastern suburb known today as Chaoyang District, which was far less populated and better connected to the coal-mining and steelmaking town Tangshan and the port city of Tianjin. The municipal government's plan to allocate a large quantity of soil from the earthworks to the eastern suburb was thus only logical. Water ponds and irrigation ditches had to be filled up before factories and infrastructure could be built. Earthworks from the wall provided the needed materials for site preparations.

The first phase of the wall-demolition project proceeded in 1959 as the city

地区	地点	数量	备注		
丰台区	共9处	124.6万方	(丰台安门外为159.5万方)		
	1. 丰台绿道站	25万方			
	2. 铁道部配件厂	4.5万方			
	3. 市地铁修理厂	15万方			
	4. 丰台新首钢工业区	10万方			
	5. 丰台桥北	40万方			
	6. 北京木村厂	7.5万方			
	7. 石油公司油库	9万方			
	8. 大红门厂	11.5万方			
	9. 京西电机厂	2万方			
朝阳区	共7处	75.5万方	(建三处堆山共276.5万方)		
	1. 开光厂	3万方			
	2. 梁庄	9万方			
	3. 三里屯	3万方			
	4. 左家庄	8.5万方			
	5. 新首钢厂西	40万方			
	6. 燃气化放物散渣	10万方			
	海淀区	共15处	62.2万方		
		1. 金总干校北	2.3万方		
		2. 北京西学院北(铁道南)	1.2万方		
3. (铁道北)		0.5万方			
4. 第五汽车厂林场		2.8万方			
5. 空军医院南		3.4万方			
6. 空军医院北		6.4万方			
7. 公主坟西		2.4万方			
8. (东)		3.0万方			
9. 牛坊营(沟)		3.0万方			
西城区	共4处	18.8万方			
	1. 琉璃厂西北角	2.6万方			
	2. 月坛北尚西(厨部)	2.2万方			
	3. 动物园西	7万方			
	东城区	共2处	1.0万方		
		1. 广安门内东的西北	1.4万方		
		崇文区	共2处	2.5万方	
			1. 龙潭口	1.0万方	
			2. 龙潭北	1.5万方	
			东城区	和平里新街口外及真寺一带共	1.6万方

Figure 1.8 List of locations for the disposal of soil from earthworks. (Beijing Municipal Archive, 131-001-00271.)

government had planned. The second phase of the project, which was expected to be completed in 1960, however, was brought to an abrupt halt. The year 1960 was the height of the Great Chinese Famine, which lasted roughly three years. The city government simply did not have either the resources or the manpower to carry on the demolition project. During the difficult years of the early 1960s, while the demolition project was put on hold, the municipal government shifted its focus to protecting the wall materials. In May 1962, the Bureau of Public Safety issued a notice titled “Preventing Injuries from Wall Excavation.”²⁰ It said that because the wall was structurally unstable, the police stations should educate urban residents not to excavate wall materials. In August of the same year, the Beijing People’s Committee asked district committees to put up fences around wall access points and to increase police patrols around the wall. “To purchase fences,” it said, “district committees can apply for funding from the Committee of Urban Construction.”²¹

The wall-demolition project was resumed in 1965. In July 1965, the municipal government started the construction of the subway’s second line, which ran through the space underneath the Inner Wall. Troops were brought in to help speed up the demolition. In 1969, Xizhi Gate, the last remaining portion of the Inner Wall, was demolished. The City Wall was now officially part of history.

Salvaged wall materials—stone bricks and soil—contributed to the modernization of Beijing during the socialist period. The municipal government distributed stone bricks to governmental agencies and state enterprises in the city. The recipients included the Department of Railway, the Sports Committee of the Central People’s Government, Beijing Normal University, Beijing No. 2 Building Company, Beijing No. 2 Road Company, the Municipal Warehousing Company, the Electronic Cable Car Company, Beijing No. 3 Road Company, the China Chemical Engineering Company, and Beijing No. 1 Sewage Company. These state agencies and enterprises used the stone bricks to construct the city’s public urban projects. Some notable projects were Guananmen Railway Station, the Beijing Normal University Swimming Pool, and the Taiyanggong Gymnasium. In 1969, the deterioration of the PRC’s relationship with the Soviet Union culminated in armed conflict in the northeastern border region of the Ussuri River. Many in Beijing believed that a war with the Soviet Union was inevitable. In preparation for the war, Mao ordered the construction of an underground nuclear shelter in Beijing. This nuclear shelter, often referred to as Beijing Underground City, was located on the south side of the Forbidden City. It was 85 square kilometers, and was 8 to 18 meters below ground level. Stone bricks from the disassembled Xizhi Gate, Chongwen Gate, and Fucheng Gate were used for its construction.

²⁰ This notice is collected in Wang (2007), pp. 168-169.

²¹ This notice is collected in Wang (2007), pp. 169-170.

Earthworks were also distributed to state agencies and enterprises in Beijing. They included, just to name a few, the Beijing Timber Factory, the Dahongmen Steel Mill, the Beijing Agriculture Machinery Factory, the Bureau of Nonferrous Metal, the Department of Railway, the Sport Committee, the Xuanwu Electronics Factory, Beijing No. 5 Automobile Maintenance Factory, the Department of Geology, China Petroleum, and Beijing Film Studio. The majority of these recipients of earthwork materials were state enterprises located at the newly developed urban district of Chaoyang.

When used for the construction of public urban projects and factories, stone bricks and earthwork materials salvaged from the City Wall either stayed in Beijing's urban center or became part of the city's newly developed urban districts (e.g., Chaoyang). These salvaged materials therefore contributed to the modernization of the city of Beijing.

1.2 Demolition Waste and the State in the Reform Period (1978 to the Present)

On December 16, 2009, after weeks of bombarding the Office of Debris with phone calls and emails, I was finally granted an interview in the office. The Office of Debris had been established under the Beijing Solid Waste Administration Department (BSWAD) in the mid 1990s. The Office of Debris' mission, as described on the BSWAD's website, is to "organize, coordinate, supervise, and inspect the generation, transportation, and disposal of debris, and to administer the utilization and the handling of building garbage."²² I was received by Chen Liangxiao, who was the assistant to the office director.²³ Chen told me that the accumulation of garbage was a serious threat to the urban environment, but that few had recognized the value of the office's service. She said she hoped that my dissertation could help people better understand the responsibilities and the achievements of her office.

Ms. Chen drew a simple diagram to explain to me the major tasks involved in debris management (Figure 1.9). The diagram had three columns, representing three major areas of intervention: generation, transportation, and disposal. In the area of debris generation, the office has the authority to issue "debris disposal permits" and "debris transportation permits" to demolition companies. Only after acquiring these two types of permits can a demolition company obtain a "project permit" from the Urban Construction Commission. To obtain debris disposal and transportation permits, Chen explained, a demolition company would have to

²² <http://www.bswad.org.cn/tabid/82/Default.aspx>

²³ Chen Liangxiao is a pseudonym.

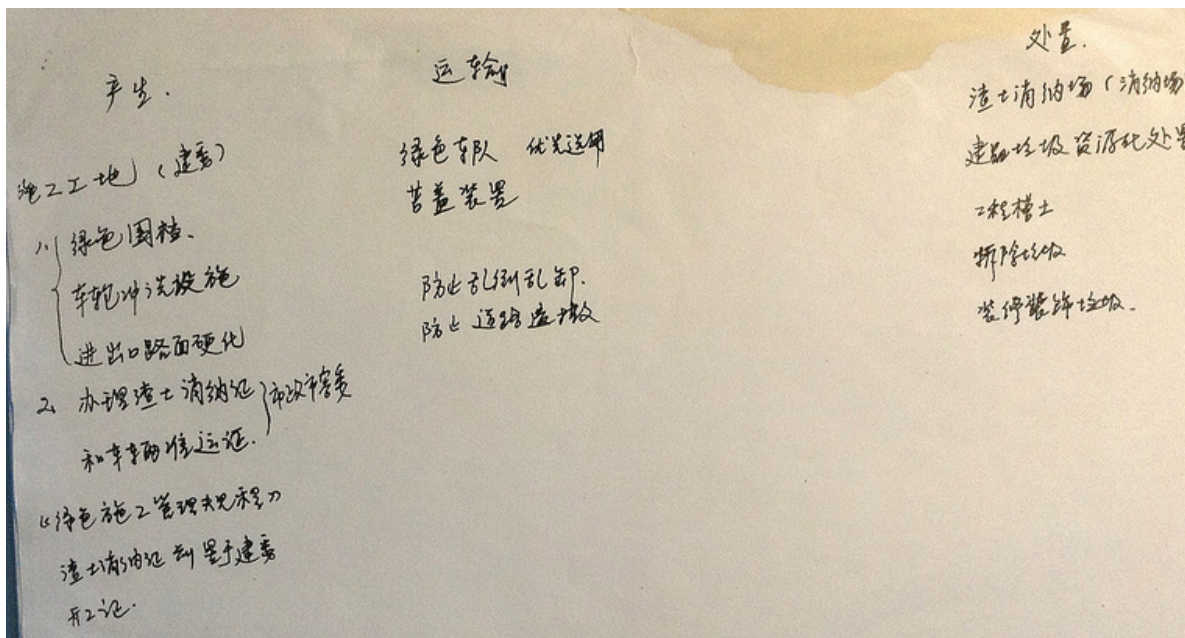


Figure 1.9 A diagram drawn by Chen Liangxiao, the assistant to the Director of the Office of Debris. (December, 2009)

accomplish three tasks: (1) pull up fences around demolition sites, (2) equip the demolition site with a truck wash facility, and (3) construct a service road at site entrances. The purpose of these requirements, as Chen further explained, is to reduce dust pollution on demolition sites.

The second area of intervention is debris transportation. Chen said that the office requires debris truckers to bring with them debris transportation and disposal permits at all time. Truckers should neither overload their vehicles nor dump debris in places other than the city’s “designated debris dump sites.” Furthermore, to make sure that debris transportation would not disturb normal traffic, the office mandates that debris trucks should not be on the road between 6 a.m. and 9 p.m. The enforcement of these rules, as Chen further elaborated, is carried out by Urban Law Enforcement Officers, or *chengguan*. I asked how much a debris trucker would be fined if he violated the rules. Chen paused a second, and replied, “*chengguan* would negotiate a price with the debris truckers.” As I will show later in Chapter 4, this was in fact a strikingly honest statement. Chen also mentioned a new type of intervention that the office had developed since 2009: the building of a “Green Truck Fleet.” This project’s function has been to replace the city’s old debris trucks with new ones equipped with low-emission engines, GPS devices, and top covers. “GPS devices allow the government to locate debris trucks, and top covers help to prevent the spilling of debris during transportation,”

Chen explained. To build up this new fleet of debris trucks, the Office of Debris has provided zero-interest loans to truckers who are willing to purchase the new generation of debris trucks.

The third area of intervention is debris disposal. Chen said that their job here was to look for sites for debris dumping. Many villages in the municipality's rural areas were willing to enter the business of debris dumping. The office chooses from these villages and offers operation contracts. Those villages signing contracts with the office have the privilege of running the debris-dumping business under the title Designated Debris Dump Site. The sites can charge debris truckers a dumping fee, but are obligated to turn away truckers who lack debris transportation and disposal permits. After villages win a contract, Beijing's municipal government gives them funds that can be used to improve roads and lighting (since debris trucks can only operate between 9 p.m. and 6 a.m.) and to purchase fire-control instruments. I asked how much these villages could charge debris truckers. Chen said that the current official rate was \$16 RMB per ton, but that the office seldom checked whether or not villages were over-charging truckers. "We have to let them make some money; otherwise, no village would be willing to accept debris," she explained.

I asked Chen about the handling of such recyclables as metal scraps, plastic, bricks, and tiles. She said that she was not exactly sure what typically happens to those materials, and that the office generally does not worry about them. "In Beijing we have many waste dealers and scavengers. They take care of that stuff," she said. I then asked her about the "use of building garbage," which was one of the office's missions listed on the BSWAD's website. Chen said that the office had adopted a plan to build a debris-recycling facility on the Gaoantun Landfill, but that "the project is still under preparation." As of this writing, the debris-recycling facility still exists only on paper.

My conversation with Chen Liangxiao on that December day in 2009 made me realize that, after the economic reforms had been underway for many years in China, a profound change had taken place in Beijing officials' attitude toward demolition waste. The tasks that the Office of Debris has been carrying out (e.g., issuing permits, building the Green Truck Fleet, searching for appropriate debris-dumping sites) all have the same goal: moving demolition waste away from urban areas. They thus reveal that officials in reform Beijing see demolition waste as antithetical to a healthy urban environment. This view of demolition waste as an environmental cost is in sharp contrast with the views of previous socialist officials, which treated demolition waste as a resource. What explains this drastic change of attitude?

In the early 1980s, the Chinese leadership initiated fiscal reforms as part of the effort to reform the economy. The main goals were to make localities

financially self-sufficient, to reduce the central government's fiscal burden, and to provide incentives for local governments to pursue economic growth. The most important part of the fiscal reforms was a tax-responsibility system for each administrative level down to the township. By the mid-1980s, many regional entities including provinces, municipalities, prefectures, counties, and townships were subject to a bottom-up revenue-sharing system requiring that localities submit only a part of their revenue to the upper echelons of government and, hence, allowing these localities to retain the remainder. Fiscal reforms of the Chinese state transformed localities into independent fiscal entities that had both responsibility for local spending and the right to control the revenue that they retained.

As fiscal reforms gave local governments control over greater amounts of income, local governments began to act more and more like firms (Oi, 1992; Walder, 1995). Often when dealing with a jurisdictionally local enterprise, local officials would actively coordinate its activities much as boards of directors would manage diversified corporations. As this trend took hold, redistributive functions that local governments around China had frequently performed during the socialist period gradually became an insignificant part of local administration.

In Beijing's official municipal-government documents about demolition waste written in the reform era, one can thus find no discussions on the topics of material monopolization and allocation. This absence reflects the steep post-reform decline in the value of demolition waste as perceived by Beijing urban officials. The retreat of the state from the collection and allocation of demolition waste resulted in a temporary crisis of waste over-accumulation in the 1980s. Wang Weipin, the chief engineer of Beijing's Urban Administration and Environment Commission, who is also known as "the reigning expert on Beijing's garbage," recalled in an interview that an aerial photo of Beijing taken in 1989 showed more than 4,500 garbage dumps, which together occupied more than 1,150 acres of land between the city's 3rd and 4th Ring Roads.²⁴ Waste from demolished houses was the main source of this material surplus.

In the context of the crisis of waste over-accumulation, there arose both the term "building garbage" (*jianzhu laji*) and a specific discourse of externalities that defined demolition waste as an environmental cost. On January 8, 1989, the *People's Daily*, the official newspaper of the CCP, published an article entitled "Will We Be Able to Break Down the Great Wall of Garbage?" by Jiang Rong. It read,

Beijing's old City Wall has disappeared, and yet, a new "wall" is in formation. [...] In recent years, as the urban population has

²⁴ Southern Capital Weekly (April 21, 2009).

continued to grow, the scale of construction has expanded, as have the outputs of industrial production and the levels of consumption; in particular, the amount of urban solid waste (which can be categorized into household garbage, industrial garbage, and building garbage) has grown at an annual rate of 10%. According to statistics, the country as a whole produces more than 6,000 tons of household garbage each year; this number is double the amount of garbage produced ten years ago. In Shanghai, the urban area generates 8,000 tons of household garbage every day, in addition to 3,000 tons of building garbage, 7,500 tons of feces, and 22,000 tons of industrial garbage. Altogether, Shanghai produces 40,000 tons of garbage each day, or 1,500,000 tons each year. [...] Based on the calculation of one ton equal to one cubic meter, this amount is equivalent to 360 twelve-story buildings.

For the first time, the term “building garbage” is used by a Chinese newspaper to refer to demolition waste. The meaning of this term differs significantly from the meanings attributable to related terms popular among socialist officials. In socialist Beijing, officials often used terms such as “demolition materials” (*chaichu cailiao*), “old housing materials” (*fangwu jiuliao*) and “old materials from demolition” (*chaichu jiuliao*) to refer to demolition waste. In Chinese, the word “material” (*liao* or *cailiao*) refers to a thing that can be used to make something else. These terms therefore imply the existence of a use value. In contrast, the term “garbage” (*laji*) means useless stuff; it thus implies no use value.

On September 1st, 1994, the Beijing Municipal Government issued *An Ordinance Regarding the Strengthening of the Management of Garbage and Debris*. It stated, “The garbage and debris that this ordinance refers to include household garbage and building garbage generated by building demolition, improvements, and renovation.” For the first time, the term “building garbage” appeared in a municipal document. A couple months later, the municipal government established the Office of Debris under the Beijing Solid Waste Administration (BSWA). The office’s function, as I mentioned earlier, was to “organize, coordinate, supervise, and inspect the generation, transportation, and disposal of debris, and to administer the use and the handling of building garbage.” For the first time, Beijing had an independent agency in charge of demolition waste.

In Beijing, the discourse of externalities that has defined demolition waste as a cost of the environment therefore emerged in a context where Beijing’s municipal government was retreating from the policy of redistributing various material resources. The dominance of the new discourse led to a crisis of over-

Year	Number of municipal ordinances that contained the term “building garbage”
1996–2000	1
2001–2005	7
2006–2010	23
2011–2012	18

Table 1.2 The number of ordinances issued by the Beijing Municipal Government that contained the term “building garbage” between 1996 and 2012. (Source: Chinese Studies Online from Wanfang—Policies and Laws of China, <http://c.g.wanfangdata.com.cn/Claw.aspx>)

accumulations of demolition waste. The crisis, however, was a temporary one. As the later chapters will show, after the mid-1990s, villages and towns surrounding Beijing became actively engaged in the appropriation of waste from the city. The use of waste by regions peripheral to Beijing’s center has greatly reduced pressures that the municipality was facing in regards to the handling of demolition waste. From the mid-1990s to the mid-2000s, thus, demolition waste did not receive much attention from municipal officials. Only a few municipal ordinances referred to demolition waste (Table 1.2). In the late 2000s, however, demolition waste reappeared as an issue in municipal governance. As Table 1.1 shows, after 2006, the number of municipal ordinances containing the term “building garbage” increased sharply. In 2011 and 2012 alone, there were eighteen municipal ordinances on the topic. The surge in official documents’ use of the term “building garbage” has largely to do with the rise of environmentalism in national policies that took effect in the late 2000s.

In the latter part of that decade, officials at the central government began to worry about the country’s overheated real estate market. They believed that local governments had invested too heavily in urban-development projects. To correct this urban-biased track of development, China’s central government demanded that banks reduce loans to developers and that local governments, including Beijing’s, find ways to slow down the nation’s surging housing prices. Furthermore, China’s central government began to address the need for green industries, sustainable growth, and ecological-restoration projects. In 2011, the

National Congress passed the 12th Five-Year Plan. On the topic of urban development, the plan declared,

City planning should be based on the principles of people first, saving land and energy, protecting biological environments, safety and practicality, and preserving culture and natural heritages [...]. [Government should] rationally define the borders of cities, regulate the construction of new towns and districts, increase population density of newly developed districts, adjust and optimize the structure of land use, and prevent the expansion of mega cities. [The goal is to] prevent and cure “city disease.”

The plan also put forward an outline of strategies for “green development” (*luse fazhan*): actively respond to global climate change (Chapter 21), improve energy saving and management (Chapter 22), develop a circular economy (Chapter 23), protect the environment (Chapter 24), and restore ecological environments (Chapter 25).

Since the 1990s within the Beijing Municipal Government, there has existed an uneven distribution of governmental resources among agencies. Because land redevelopment is the primary source of municipal revenue, the greatest portion of municipal resources typically go to municipal agencies that oversee land-development projects and that include the Commission of Housing and Urban-Rural Development (*jianwei*), the Commission of Urban Planning, and the Bureau of Land Resources. Agencies that are not directly involved with land redevelopment, such as the Commission of Urban Administration (which administers the BSWA) and the Bureau of Environmental Protection, are much less resourceful. The central government’s new emphasis on “green development” gives the latter the opportunity to change the power dynamics. The Commission of Urban Administration began demanding more resources from the municipal leadership in Beijing, and justified this demand by painting urban development as antithetical to the environment. Waste serves as a case to construct the story of environmental destruction. Officials in the Commission of Urban Administration actively promote the view that the city is now undergoing another crisis of waste over-accumulation.²⁵ It is in this context that the term “building garbage” has

²⁵ One good example is the growing public interest in Wang Jiuliang’s photo series “The City Besieged by Waste.” Wang is a free-lance photographer and film director. In “The City Besieged by Waste,” he presents photos of municipal and illegal garbage dumps that he took in Beijing between 2008 and 2011. He also produced a documentary film under the same title. Although the photo series and the film reveal the dark side of the capital city, Wang had little problem showing his work in public. He was invited to give talks at universities and to participate in interviews for newspapers; his film was even shown in commercial movie theaters. During an informal

taken on such importance in official documents.

The view that demolition waste is a cost to the environment, however, is problematic. It says nothing about either the consumption practices or the organization of waste-related works. These are the two issues that I will now turn to.

conversation, Wang told me that many of the publicity events that he attended were sponsored by the Commission of Urban Administration.

CHAPTER 2 THE REUSE CIRCUIT

This chapter and the two chapters that follow provide a detailed account for the geography of demolition waste in the reform period. This chapter examines the reused materials: bricks, tiles, windows, doors, and floor plates. My main argument is that the reused materials mediate the process of urban expansion in contemporary Beijing. Villages targeted for demolition, which are usually located at the city's edge, use these materials to create new housing properties. This practice, known as *tuji jianfang* (construction assault), allows relocation households in these villages to negotiate better compensation deals with the Beijing Municipal Government. In other words, the peripheral villages use reused materials to construct buildings that are slated for demolition in the near future. What this curious economy of reuse reveals is that, after China's economic reforms got underway, a profound shift took place in the geography of demolition waste. The periphery has now become the center of waste consumption.

Following the reused items back to their point of origin, or demolition sites, this chapter further shows that the periphery's uses of demolition waste, such as the practice of *tuji jianfang*, have made waste recovery a vibrant part of Beijing's urban economy. Because materials such as used bricks and tiles can be put up for sale, building demolition has become a lucrative business. Demolition companies actively engage in material salvaging. They are *de facto* the miners of building waste. They are often willing to pay owners of to-be-demolished properties for access to demolition waste. In other words, to-be-demolished properties have now become assets.

Demolition companies subcontract demolition projects to so-called "second bosses," who are rural migrants with experience in building demolition. These second bosses hire other migrants as demolition workers. This system of labor subcontracting allows demolition companies to flexibly adjust the size of the workforce, since buildings vary in terms of size, height, and material composition. Also, this system of labor subcontracting allows demolition companies to create a significant distance between themselves and workers. When facing issues such as delays of payment or work injuries, demolition workers fight with the second bosses who hired them. The workers know very little about the demolition companies for whom they have been working. The existence of demolition work teams as independent migrant-run businesses facilitates the flow of profit from the urban center to the periphery.

In post-socialist Beijing, used bricks, tiles, windows, doors, and floor plates travel between demolition sites and to-be-demolished urban villages in a never-ending circle. Such an economy of reuse profoundly compromises the livelihoods

of the city's migrant population. Villages at the city's fringes are home to the majority of the city's rural migrants. As land expropriation triggers *tuji jianfang* in these villages, rural migrants find themselves living in an environment filled with noise, dust, and traffic jams. Such drawbacks to the economy of reuse amount to a constant rather than a sporadic state of urban experience. After a village is demolished, rural migrants who used to live there move to another village that is farther away from the urban center. As Beijing continues to expand, however, the new village that the migrants come to settle in is soon targeted for demolition, and, as a result, another round of *tuji jianfang* takes place. In other words, *tuji jianfang* as a practice of reuse follows rural migrants from village to village.

2.1 The Consumption of Reused Materials

In 1988, China announced the establishment of the "urban land leasehold market." Under this new land system, although all urban lands remained the state's properties, their "use rights" could now be leased to private individuals for a fixed period of time.²⁶ This new land system made the conversion of rural lands into urban lands a lucrative business for municipal governments. By taking lands from rural collectives and selling their use rights to developers, municipal governments could effectively boost local revenues.²⁷ As a result, across the country municipal governments began to grab lands from rural collectives. In Beijing, the municipal government tore down 42 villages in 2004, 69 in 2005, 80 in 2006, and 22 in 2007 (Ji, 2006).²⁸ The spokesperson for the Beijing Bureau of Land and Resources has once admitted publicly, "Village cleanup has become an important way to increase the city's land reserves" (Shihua Financial News, December 16, 2009). In April of 2010, while I was conducting fieldwork in Beijing, the municipal government announced that it would clean up another 50 villages by the end of that year (Figure 2.1). Even though the project involved the relocation of as many as 232,000 residents (rural migrants living in these villages were not counted), it was expected to bring the city's land reserves an additional 33 square kilometers of land.

Village demolition as the Beijing municipal government's strategy for territorial expansion has given rise to the practice of *tuji jianfang* (construction assault). The term refers to the creation of housing properties by relocation

²⁶ Under the China's current land system, there are two types of land: urban land and rural land. Lands labeled as "urban" are properties of the state. Rural lands are owned by collectives. In other words, there is no private land ownership in China.

²⁷ Hsing (2010) and Lin & Ho (2005) provide useful analyses for the process of land commodification in reform China.

²⁸ The numbers come from the following sources: Zhou, 2004; Zeng, 2006; Yin, 2007.

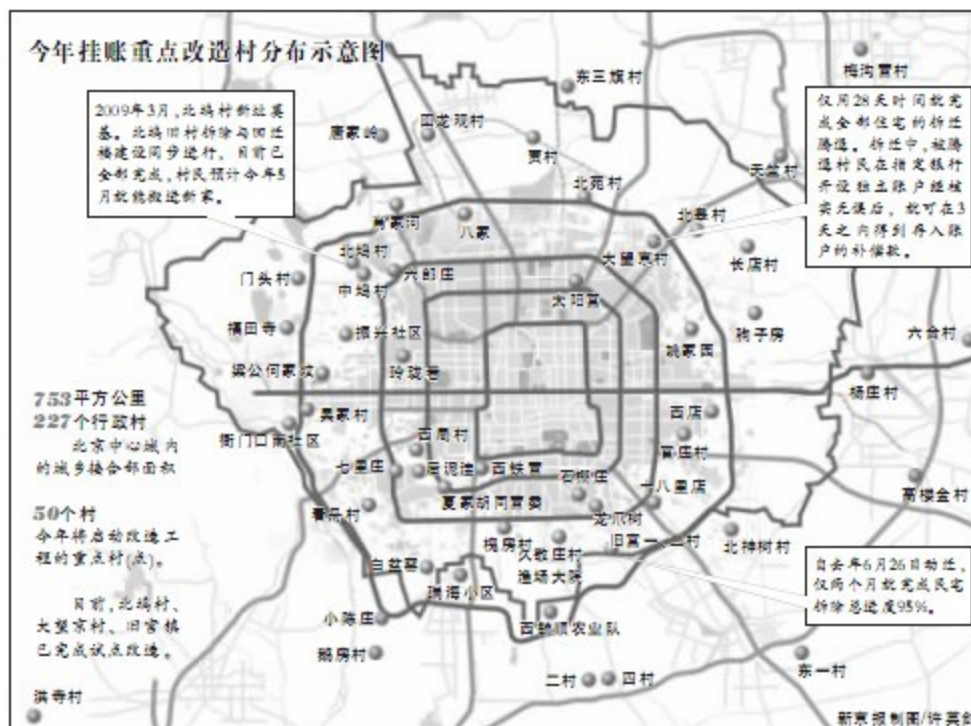


Figure 2.1 The locations of 50 villages to be demolished in 2010. (Beijing Times, February 28, 2010)

households in to-be-demolished villages. The main purpose of such a practice is to maximize the compensation for relocation. By law, compensation for relocation is calculated on the basis of the floor area to be demolished. By expanding existing houses or putting up new buildings, therefore, relocation households can give themselves a better position in the bargaining process with the Beijing municipal government.

It is certainly true that all relocation households, regardless of their location, have an incentive to maximize compensation for relocation. The practice of *tuji jianfang*, however, seldom occurs in urban areas. This is because households in rural areas have control over these sites, known as “reserved housing lands” (*zhaijidi*), which provide the needed space for property expansion. Reserved housing lands are rural lands allocated to individual households for housing. Although in theory these lands are the properties of rural collectives, in practice the lands are in the possession of individual households. Rural households, therefore, enjoy more freedom in the construction of new residential structures or the expansion-oriented renovation of existing residential structures. In contrast,

urban households do not have much control over the land on which they rest. They are less likely to be able to engage in *tuji jianfang* when facing demolition. Relocation households in urban villages contract *tuji jianfang* projects to construction teams, which are normally assembled by people from nearby villages. In order to reduce costs, most relocation households are open to using the cheapest construction materials available to contractors. As a result, salvaged materials from previously demolished buildings become the primary building materials for *tuji jianfang* projects. In 2010, according to *tuji jianfang* project contractors and members of relocation households whom I interviewed, every square meter of floor area built with used materials would cost a relocation household roughly \$700 RMB (\$110 USD). The amount of compensation for demolished houses located on Beijing's fringes (that is, the area between the city's 5th and 6th Ring Roads) was set at \$1,720 RMB (US\$270) per square meter. A relocation household can expect to earn roughly \$1,000 RMB from every square meter of newly constructed floor area.

More specifically, *tuji jianfang* project contractors use salvaged bricks, tiles, windows, doors, and floor plates to construct buildings. Most of the time these materials are hauled directly from demolition sites to those soon-to-be-demolished villages. But there also exist a few secondary venues from which project contractors can acquire used building materials. Windows and doors, for example, can be purchased from secondhand marketplaces. These are marketplaces specialized in the trading of used goods. The things that customers can find here include home appliances (e.g., TV sets, washing machines, refrigerators), furniture, kitchenware, and windows and doors. Floor plates can be acquired from some villages in rural areas. After the rise of the urban-land leasehold market, many rural villages in Beijing began to search for ways to participate in the city's construction boom. The market for used floor plates is one such business opportunity that materialized. Villages purchase floor plates from demolition companies and use available village lands as storage stations. *Tuji jianfang* project contractors are their major customers.

After salvaged materials are hauled to urban villages, they are used to construct buildings that are expected to be torn down in the near future. These short-lived buildings can be divided into two types: space markers and rental properties. The difference between these two is that rental properties possess use value whereas space markers do not. By "space markers," I refer to structures that function no more than as a marker of relocation households' newly created properties. Space markers can be, for example, a wall, an extra floor/room built without an access, or a structure constructed without a sufficient amount of concrete or cement to ensure structural stability (Figure 2.2 and 2.3). Space markers are products of the situation where villagers learn about a relocation



Figure 2.2 A relocation household in Pi Village, Chaoyang District, used old bricks to construct a wall structure outside the house to mark the property. (May 25, 2010)



Figure 2.3 An extra floor being constructed on top of an existing building. (Dongxiaokou Village, Changping District; March 9, 2010)

project through an official announcement. In order to prevent villagers from carrying out *tuji jianfang*, which makes land expropriation expensive, Beijing's municipal government normally announces a village-relocation project only at the last minute. In 2010, for instance, the municipal government announced in April that it would relocate 50 urban villages. By as early as September of that year, some villages were already being demolished. This means that some villagers had fewer than five months to prepare for moving. Under short time constraints such as this, occupation of space is relocation households' primary concern when they embark on *tuji jianfang* projects. Other issues that would normally concern a house owner—structural stability, comfort, accessibility, or style—are sacrificed.

But *tuji jianfang* can also be triggered by rumors or wishful thinking. One case in point is the *tuji jianfang* that took place in Nangezhuang Village in Yufa Township, Daxing District. In 2008, the Daxing District Government published *The Twelfth Five-Year Plan for the Economic and Social Development of the Daxing District*. In this plan, it was mentioned that the southern part of the district, where Yufa Township was located, had been chosen by higher levels of government as the site for Beijing's new airport, called the Capital No. 2 International Airport. Curiously enough, however, the plan did not identify the exact location of the airport project. A few weeks after the plan was published, households in Nangezhuang Village began to receive construction-ban notices from the township government. The village committee also received orders from the township to tear down a few buildings that the village had built earlier without construction permits. Because of these abnormalities, some villagers came to the conclusion that Nangezhuang must have been within the planning area of the new airport. *Tuji jianfang* projects then got underway, and as the rumor spread, more and more villagers joined in. *Tuji jianfang* lasted for three years in Nangezhuang. The airport project, however, has never itself gotten underway. In 2011, the *Jinhua Times* ran a special article on this awkward construction boom in Nangezhuang. It reported that as a result of three years of building construction, the price of used bricks in the area had jumped from twenty cents to thirty-eight cents per piece. It also noted that because villagers had been preoccupied by the possible relocation for so many years, when they greeted each other, they would ask, "Are you going to build more?" (*hai gai ma?*) rather than use the more common greeting phrase "Have you eaten yet?"

When rumors initiate *tuji jianfang*, such as the case of Nangezhuang, relocation households use salvaged materials to construct rental properties. Because the prospect of a relocation project is uncertain, villagers need a kind of insurance covering sought-after returns on their investments. A rental property can be an extra room or floor attached to an existing house or a new freestanding building. Because these properties are constructed to accommodate activities, they

are built with more care (in comparison to space markers) and are equipped with components that a normal building would have, such as partition walls, utility cables, and plumbing systems. Some well-to-do urban villages are even able to put up multi-story structures. An apartment building that I came across in Dongsanqi Village in 2010, for instance, was four stories high (Figure 2.4). It contained a row of shop spaces on the first floor and 36 rental units on the remaining three floors. Each floor had a shared bathroom.

Because the practice of *tuji jianfang* makes land expropriation expensive, the municipal government has been trying to find ways to clamp down on the practice. In 2003, it issued *Guidelines for the Relocation of Houses on Collective-owned Land in Beijing*. The document stated that once a village-relocation project is announced, district and county governments should no longer issue new permits for the construction, renovation, and expansion of houses within the relocation area (Article 8). This article provides government a legal basis for punishing relocation households that participate in *tuji jianfang*. Police can now fine those households or cut off their water or power supplies. Furthermore, the article frees the government from any obligation to provide compensation for *tuji jianfang* structures. Another section of the *Guidelines*, declares that illegal buildings would not be included in compensation schemes. Thus, even if households seeking to carry out *tuji jianfang* projects could acquire construction permits, officials would not compensate the projects with even a penny.

The Beijing municipal government's attempt to quash the practice of *tuji jianfang*, however, has not been successful. When the government sends police officers to villages to crack down on the aforementioned activities, the results tend to be counter-productive. Both the presence of the police officers and their efforts to stop building construction reaffirm for villagers the effectiveness of the practice as a strategy capable of offsetting the perceived harm of land expropriation. In the end, it is often the case that those households that were originally hesitant to participate in *tuji jianfang* come to embrace the practice and to find ways of circumventing the law. In turn, when *tuji jianfang* grows bigger in villages, it becomes more difficult to stop. "This is what we call '*fabu zezhong*' [referring to the ineffectiveness of laws that punish majorities]," as one villager in Dongxiaokou Village explained to me: "Which government in Beijing has the guts to cut off the water and power supply of a whole village?"

Relocation households are also not discouraged by the possibility that they may not receive compensation for their *tuji jianfang* structures. Villagers negotiate compensation deals not directly with the Beijing municipal government, but with relocation companies. These are companies that help the government or land developers carry out relocation projects. It is not a secret that relocation companies are often willing to include *tuji jianfang* structures in compensation schemes.



Figure 2.4 The village committee of Dongsanqi built a four-story apartment building during a *tuji jianfang* project. (March 25, 2010)

Zhou Xiaohe is a former employee of Zhihong Relocation Company, one of Beijing's largest.²⁹ I first met him in 2009 through Douban, a popular Chinese social-networking website, where registered users can post comments on books, films, and music, or share information about ongoing cultural events. One day, without any expectation of getting a response, I posted a couple of short paragraphs on the website to introduce my research project. I asked if anyone in the demolition business would be willing to meet up for a chat. Zhou, who had been fired from the company a couple of months earlier (and who filed a lawsuit against the company, as I later learned), replied to my post. From 2009 to 2011, I met with him for lunch or dinner from time to time to chat about our work and life

²⁹ Zhou Xiaohe is a pseudonym.

in general. Sometimes we were joined by his former colleagues from the Zhihong Relocation Company. Zhou and his colleagues taught me much about their line of work. One thing I learned from them is that the regulatory framework that the Beijing municipal government set up to discourage the practice of *tuji jianfang* is used by relocation companies in a quite unexpected way.

Zhou explained to me that relocation companies oftentimes would include *tuji jianfang* structures in compensation schemes because doing so can facilitate the negotiation process:

Most relocation households think that people from the relocation companies are the enemy. They scold us, and try to kick us off their properties. Sometimes they can turn completely irrational and violent. I remember one time a person actually threw a gas bomb into our office. He did not care that one of our staff was pregnant at that time. Things like this just make it impossible for us. But we're not the ones taking away their houses; we're just normal people trying to do our jobs. They need to understand that. Most of us are actually very sympathetic to their situation.... Including illegal buildings in compensation schemes is one way we show our sympathies. They need to know that we're actually doing them a favor ["zuo renqing"], because by law they are not supposed to receive a penny from illegal buildings. We're therefore making a compromise, and hope that they would stop making things difficult ["diao nan"] for us, too.

Classifying *tuji jianfang* structures as “illegal buildings” thus has failed to discourage relocation household from carrying out the practice. It in fact allows relocation companies to “do a favor” for relocation households, which helps smooth out the negotiation process. Relocation households in urban villages certainly know how to play along with this process of circumvention. By standing firm, and acting “irrational” when necessary, they can make relocation companies compromise. Few relocation households question the wisdom of their investment in *tuji jianfang* projects.

In post-socialist Beijing, households in soon-to-be-demolished villages demand better compensation for relocation by using salvaged bricks, tiles, windows, doors, and floor plates to create new properties. These materials are the bargaining chips in land-expropriation projects. They mediate the process of urban expansion in contemporary Beijing.

2.2 Demolition Companies and the Mining of Building Materials

In this section, I shift the focus from the consumption of demolition waste to the salvaging of building materials. My purpose here is to start to delineate how the utilization of waste by the periphery, such as the practice of *tuji jianfang* has come to shape Beijing's waste sector and its relationship to the city. I highlight three empirical findings. First, the periphery's quest for materials from demolished buildings has turned building demolition into a lucrative business. Demolition companies actively engage in material salvaging. They are *de facto* miners of demolition waste. Second, because material salvaging has become profitable, land developers are able to charge demolition companies rent. Demolition companies oftentimes work for free for land developers, or even have to pay developers for the right to demolish a building. Such rent-seeking practices suggests that the waste sector is an important part of the urban economy in post-socialist China not so much because of the services that the sector provides to cities as because the sector allows cities to extract profits from under-used properties, such as buildings slated for demolition. The third empirical finding highlighted here is that demolition companies assemble their workforces by subcontracting projects to migrants with experience in building demolition. Through this system of labor subcontracting, demolition companies not only can flexibly adjust the size of their workforces according to project needs, but also can distance themselves from labor agitation: when facing issues such as delays of payment or injuries, demolition workers fight with the migrant bosses who hire them instead of with the demolition companies whom they work for.

Building Demolition as a Mining Business

The uses of waste by Beijing's periphery include the previously discussed practice of *tuji jianfang* have turned building demolition projects into a lucrative field of business. In addition to bricks, tiles, windows, doors, and floor plates, materials that one can commonly see on demolition sites include metal scraps, plastic, glass, wood scraps, asphalt, rubber, insulation foam boards, concrete, and cement. Among these materials, only waste concrete and cement cannot be put up for sale. Other materials all have potential buyers. Bricks, tiles, windows, doors, and floor plates can be sold directly to *tuji jianfang* project contractors. Metal scraps, plastic, glass, wood scraps, asphalt, rubber, and insulation foam boards can be sold to recycling stations (see Chapter 3). The result is that demolition companies become actively engaged in material salvaging. Demolition companies are therefore waste-mining businesses. For them, winning a demolition project means gaining access to valuable materials.

Contemporary China has no shortage of strike-it-rich stories in the field of building demolition. One well-known example is the story of Chen Guangbiao, who is widely referred to as “China’s No. 1 Philanthropist” (*zhongguo shoushan*).³⁰ Chen was born to a poor peasant family in Jiangsu Province in 1968. When he was two years old, his elder brother and sister died of malnutrition. In later years, Chen repeatedly mentions this family tragedy as an event that has constantly motivated him to climb up the wealth ladder. After he graduated from the Nanjing College of Chinese Medicine in 1989, Chen first went into the business of selling health products. He sold medical instruments and packaged *lingzhi* mushroom powders to urban households in Nanjing and cities nearby. In the late 1990s, after realizing that the profit margins of health products were shrinking rapidly, he began to look for other business opportunities. A friend of his who was an expert in building implosion suggested that building demolition is a field of business worth pursuing. This friend told Chen that because demolition-derived materials such as construction-grade steel and wood scraps could be sold to recyclers, oftentimes demolition companies were more than happy to work free of charge (*baigan dou yuanyi*) for land developers in exchange for the opportunity to sell these materials. Chen then did some research of his own. Looking at the city of Shanghai as a case study, he found that although there were several million square meters of floor area being demolished each year, few entrepreneurs had taken this opportunity seriously. In 2001, with the help of close relatives and friends, Chen established the Huangpu Demolition Company.

In 2002, Chen’s company acquired its first project from the Nanjing Municipal Government: the demolition of Jiangsu Exhibition Hall. The deal was that the municipal government would not pay Chen’s company a demolition fee, but the company could keep all the building materials. Chen recalled that the contract was like a permission slip to acquire an “invisible gold mine.” (Li, 2008) The company earned more than four million RMB from the sale of salvaged materials. After paying its demolition workers, the company found itself with a profit of \$2.85 million RMB. For the first time in his life, Chen could call himself a millionaire.

In 2003, Chen renamed the company Jiangsu Huangpu Recycling Resources Company. Even though he had been in the demolition business for fewer than two years, he had successfully established many personal connections with officials, recyclers, construction companies, and land developers in the Yangtze Delta Region. The renaming of the company, in fact, reflected his ambition to use these connections to further expand his business empire. Chen expanded his business in two directions. The first direction involved widening the

³⁰ I rely on the following magazine and newspaper articles to tell the story of Chen Guangbiao: Li (2008), Beijing Morning News (December 7, 2010), Liu (2011), and Li (July 24, 2008).

scope of the company's recycling services. In addition to salvaging building materials from demolition sites, Chen now began to recycle other waste materials, such as retired automobiles, home appliances, and factory equipment. The second direction led to an expansion of the company's demolition business into other cities and regions. In the years that followed, the company carried out demolition projects in Jiangsu, Shanghai, Guangzhou, Shandong, Shanxi, Sichuan, Tianjin, Beijing, and even Hong Kong. It was reported that by 2012, the company had demolished a total of more than 200 million square meters of floor area.

Chen expanded his company's demolition business to the capital city of Beijing in the late 2000s. In 2009, the company contracted with the Beijing Municipal Government for a high-profile project: the demolition of houses along Changan Boulevard. Changan Boulevard is an east-west bound 10-lane avenue that runs along the north side of Tiananmen Square. It is the venue where the yearly National Day parade is held. In 2009, the municipal government initiated a boulevard-widening project to celebrate the 60th anniversary of the founding of the PRC. Chen's success in entering the demolition business in the capital city with such an important project was built upon a series of philanthropic activities that had drastically increased Chen's personal and his company's publicity. In 2007, Chen had donated a total of \$1.81 RMB billion for poverty relief. The *China Philanthropy Times* then granted him the title "China's No. 1 Philanthropist." In May 2008, soon after an 8.0-magnitude earthquake shocked inland Sichuan Province, Chen led a rescue team to Sichuan and donated over a billion RMB for earthquake relief. Premier Wen Jiabao called him "an entrepreneur with good will, compassion, and a warm heart for earthquake victims."³¹ Chen's active engagement in philanthropy also drew much criticism. During the Sichuan earthquake rescue, Chen had himself photographed with victims being carried on his back. Critics said that Chen had abused the national tragedy for his own fame. In 2011, Chen's company launched a poverty-relief event in Nanjing for the country's remote areas (e.g., Tibet, Yunnan, Gansu, and Guizhou). Chen made sure that, during the press conference for the event, the stage was lined with 330 "cash bricks," each one being a bundle of paper bills worth \$100,000 RMB. Some newspapers commented that the event was more of a blunt demonstration of personal wealth. Despite being negative, these comments further publicized Chen and his company. He and his Yangzi-based demolition company were now known nationwide.

In 2010, the Chen's company successfully won another high-profile demolition contract in Beijing: the disassembling of a tower building owned by CCTV (China Central Television). This tower building, designed by Dutch

³¹ Premier Wen's praise on Chen Guangbiao can be found in this video clip: <http://www.imgo.tv/clip-201104-1-29-93543-103916.shtml#1>

architect Rem Koolhaas as a part of CCTV's new headquarters complex, had caught fire on the night of the Lantern Festival in 2009. The fire had stemmed from an unauthorized fireworks display undertaken by the original manager of the construction project (the headquarters complex was under construction at that time). The demolition project was, thus, directed at the resulting damage, restricted chiefly to the building's outer walls and the roof (the main structure of the building, surprisingly, had not been seriously damaged). To complete the project, the demolition team removed the damaged sections, which were made of glass panels, steel, and other metals. Chen's company was not paid a demolition fee, but all the building materials were at the company's disposal. Later, in an interview, Chen revealed that the materials extractable from this project had been estimated to be worth more than \$20 million RMB (Beijing Morning News, December 17, 2010).

The story of Chen Guangbiao vividly illustrates that building-demolition projects are not, at least in the context of reform China, just projects of "creative destruction" that open up fresh room for accumulation, as (2001) has theorized. They are also at the same time opportunities for accumulation in their own right, exploited by Chen Guangbiao and like-minded entrepreneurs who can identify business opportunities in peripheral regions' demand for waste materials. Cities that have a vibrant land market are particularly fertile mining grounds that these entrepreneurs cannot afford to ignore. And it merits comment that Chen's willingness to spend a good amount of his personal wealth on philanthropy likely played a significant role in his company's successful bids for projects in Beijing.

Material Salvaging and Rent

As demolition projects have become opportunities for profit-making in China, many owners of to-be-demolished buildings, normally land developers or governments, have begun charging demolition companies for the right to demolish the buildings. In post-socialist Beijing specifically, this rent-seeking practice strongly reflects the waste sector's status as an important part of China's urban economies.

There exist two kinds of relationships between a demolition company and the owner of a to-be-demolished building: the contract relationship and the commission relationship. In a contract relationship, a property owner pays a demolition company to demolish a building. By contrast, in a commission relationship, a demolition company pays property owners for the right to demolish a building. Most contract relationships are associated with the demolition of concrete-steel structures taller than six stories. The reason for this characteristic is that the demolition of such taller buildings requires the use of high-reach building



Figure 2.5 The demolition of Hademen Hotel (October 26, 2009)

equipment, and most of the time, the sale of scrap steel cannot cover the cost of the corresponding equipment rental—in other words, the only profit to be made from such a demolition project would have to come from the property owner. One example of the contract relationship is the demolition of Hademen Hotel. The municipal government in Beijing built this hotel in 1974 to accommodate foreign guests. It was an eight-story concrete–steel structure. In 2008, a land-development company called Glory Real Estate bought the property and decided to build a new shopping mall on the site. I was told by the manager of the demolition project that the Glory Real Estate paid demolition company \$500,000 RMB for the work. In this case, the salvaged materials (mainly scrap metals) were at the disposal of the demolition company. The income from the sale of the salvaged materials then constituted an extra revenue for the demolition company.

Contract relationships, however, are rare. Most of the demolition projects I came across during my fieldwork in Beijing were carried out through the



Figure 2.6 “Worshipping the God of Fortune.”
(Procuratorial Daily, December 23, 2008)

commission relationship. That is, a demolition company would have to pay the property owner for the right to demolish a building.

There are two forms of payment in a commission relationship. The first form of payment is “materials for work” (*yiliao daigong*). This is a form of payment in which a demolition company agrees to work for free for a property owner. The demolition of the Jiangsu Exhibition Hall and the partial demolition of the CCTV tower building, mentioned earlier, are cases in point. The other form of payment is money. That is, a situation in which a demolition company agrees not only to work for free for the property owner, but also to pay a fee for the right to demolish a building. This second form of payment takes place when the to-be-demolished building is a brick structure. Brick-building demolition projects are the most sought-after projects by demolition companies because the practice of *tuji jianfang* in urban villages creates a constant demand for used bricks. In other words, almost every single scrap of material from a brick structure can be put up for sale.

Money payment is often made in the form of bribery. On December 23, 2008, the *Procuratorial Daily*, a newspaper run by the Supreme People’s Procuratorate of the PRC (a national institution equivalent to the FBI in the United States), published a cartoon entitled “Worshipping the God of Fortune” (Figure 2.6). In this cartoon, a person representing a demolition company kneels down in

front of the director of a relocation office. Apparently he has offered the director a huge chunk of gold bullion. The relocation-office director, dressed as an official in imperial times, tosses a demolition-project contract to the demolition company in return. The gown that the office director wears is embroidered with the Chinese character meaning “greedy” (*tan*). And in front of the office director there is an incense burner, engraved on which is the declaration “May wealth and riches be drawn your way.” The depiction in this cartoon refers to a corruption case in Nanjing City, where a district official by the name of Zhu Ronggen was found taking a series of bribes from demolition companies during his term as the director of a district relocation office. It is reported that between 2002 and 2006, Zhu earned a total of \$1.06 million RMB through demolition projects. “Zhu took bribes regularly, just as he regularly received government paychecks,” the *Procuratorial Daily* wrote.

The existence of the commission relationship in the business of building demolition reveals that because of peripheral Beijing’s quest for demolition waste, owners of to-be-demolished buildings can request rent from demolition companies. The development of the waste sector in Chinese cities has allowed property owners to materialize profits from under-used assets.

Assembling a Demolition Workforce

Demolition companies do not hire workers directly. Instead, they subcontract demolition projects to so-called second bosses (*er laoban*). Second bosses are mostly rural migrants with experience in building demolition, and they normally hire workers through familial ties and birthplace affinities. Demolition workers are, therefore, also rural migrants. Most workers are recruited on the basis of oral consent; formal labor contracts are rare. These migrant-organized demolition workforces are called “demolition teams” (*chaichu dui*). Second bosses are the people who pay demolition workers wages and are responsible for providing workers with tools, meals, and transportation to demolition sites. Demolition workers provide the physical labor: tearing down buildings, sorting out valuable materials, and cutting materials into appropriate sizes for transportation. In cases where the building under demolition is made of brick, a great amount of labor is necessary for the process of “*qie zhuan*”: chopping off concrete and cement from used bricks. Demolition companies usually put only one or two staff members on demolition sites to supervise demolition projects. One of the responsibilities of these supervisors is to ensure that demolition teams are not selling salvaged materials behind the given company’s back.

Maintaining a regular demolition workforce is not a cost-efficient way to run a demolition business because the number of workers necessary for efficient

building demolition varies from one project to another. For example, the greater the floor area of a to-be-demolished building, the greater the number of workers needed for the demolition project. In Beijing, bigger projects are often found on the city's fringes, where villages are undergoing wholesale demolition because of land grabs. One of the largest village-demolition projects I visited between 2009 and 2011 was the demolition of the Red Army Camp Village. This project was 5 acres in size, and on a normal day there were 70 to 80 demolition workers working on the project. All things equal, buildings taller than six stories normally require fewer workers to demolish than shorter buildings do, because the former buildings tend to use heavier machinery than the latter buildings (e.g., high-reach building equipment may need a only one or two workers to operate). During the demolition of the aforementioned Hademen Hotel, the land developer hired a team of sixteen demolition workers along with two pieces of high-reach building-cutter and an excavator. Because the building cutter and the excavator covered most of the demolition work, the demolition team focused on material salvaging: pulling out rebar and other metal scraps from the rubble, and collecting windows and doors. Conversely, the demolition of a brick structure requires more workers than a concrete-steel structure, because to avoid damage to bricks, demolition companies normally try not to use bulldozers and excavators during demolition. Instead, they rely on manpower to tear down roofs and walls. In addition, salvaging used bricks is a labor-intensive process. Concrete and cement have to be shaved off from bricks before the bricks can be put up for sale (Figure 2.7).

As mentioned earlier in this study, there is another reason for demolition companies' tendency to prefer the system of labor subcontracting: it creates a distance between demolition companies and workers. Most demolition workers have little idea about the demolition companies they work for. Workers who make job-related demands deal directly with the migrant bosses who hire workers, not with the demolition companies themselves.

There are two main sources of discontent among demolition workers in Beijing: payment delays and insufficient compensation in work-injury cases. Both of these sources are closely associated with the commission relationship's status as the prevailing form of project deals in the business of building demolition. In a commission relationship, a demolition company pays the owner for the right to tear down a building. This means that the demolition company has no revenue until materials are collected and sold. It therefore becomes a common practice for demolition companies to push back payments to second bosses until projects are nearly complete. Under this situation, second bosses often have to use money from their own pockets to pay workers. And if the second bosses either do not have the money or are unwilling to dole it out, only two options remain. The first is to delay payments to workers. In Beijing, demolition workers are usually



Figure 2.7 Piles of shaved bricks in Red Army Camp. (March 25, 2010)

promised payment every seven to ten days, but in reality they wait much longer, in some cases up to several months and the amount of payments is frequently lower than what was promised. The second option is to rush a project. There are two ways to rush a project. One is to make workers work overtime. The other is to ignore standard demolition procedures, such as tearing down structural walls (which normally contain more bricks than supporting walls) before taking out the supporting walls. Both methods increase the likelihood of on-site worker injuries.

Because demolition workers know little about the companies they are working for, when they are not paid on time or are refused compensation for work injuries, they often think that the second bosses who hired them are to blame. In such cases, jilted workers utter such comments as “I followed the wrong boss” (*gencuo laoban*) or “This boss has no heart” (*laoban mei renxing*) in explaining their plight. Second bosses are the people who face frustrated workers, who quarrel with them, engage in physical fights, walk off demolition sites, or denigrate workers behind their backs. In contrast, demolition companies are rarely targeted by angry workers.

2.3 Struggles with the Economy of Reuse

In post-socialist Beijing, materials like used bricks, tiles, windows, doors, and floor plates travel between demolition sites and soon-to-be-demolished villages in a seemingly never-ending circuit. This economy of reuse has profound effects on the livelihoods of the city's migrant population. Villages on the city's fringes are home to a majority of the city's rural migrants, and as land expropriation triggers *tuji jianfang* in these villages, rural migrants find themselves living in an environment filled with noise, dust, and traffic jams. Such a struggle with the economy of reuse is a constant rather than a sporadic state of urban experience. After a village is demolished, rural migrants have to move to a village that is farther away from the urban center. As Beijing continues to expand, the new group of urban villages where the migrants have recently settled are soon targeted for demolition, and in turn, another round of *tuji jianfang* takes place. In other words, *tuji jianfang* as a practice of reuse follows rural migrants from village to village. The reuse of demolition waste has substantially compromised the livelihoods of the city's migrant population.

In the late afternoon of March 25, 2010, I went to visit Dongsanqi Village, located in Beijing's northern district of Changping. About a month earlier, on February 21, 2010, the *Legal Evening News* released an interview with a high-ranking district official who revealed that the district government was planning to demolish thirty urban villages in 2010. In this interview, Dongsanqi was mentioned as one of the four urban villages on the priority list (*zhongdian zhengzhi cun*). Soon thereafter, *Tuji jianfang* got underway in Dongsanqi, and I went to see how the events were unfolding.

I had been to Dongsanqi several times prior to this visit. On the south side of the village was a recycling marketplace that, since 2009, I had been occasionally frequenting to conduct interviews. Dongsanqi was a typical urban village. Of the 30,000 people living there, about 93% were rural migrants. These migrants lived in cheap rental housing whose construction had been overseen by the village's previous wave of residents. The village was divided by an unpaved north-south street. Along this main street, one could find eateries, grocery shops, electronic shops, hair salons, and an internet bar. When I arrived in Dongsanqi on that day I found that the whole village had become a big construction site. Buildings were being put up everywhere, not only on vacant land parcels, but also on top of existing structures. Along the village's streets and alleyways, and in open spaces such as a schoolyard and the small plaza in front of the village committee, used bricks and tiles, along with other building materials, were piling up.



Figure 2.8 *Tuji jianfang* blocking the streets of Dongsanqi. (March 25, 2010)

Construction projects compromised the daily lives of migrants living in Dongsanqi. On Huinan Road, which connected the village to the closest main boulevard, construction materials were piling up in the middle of the road (Figure 2.8). Because the traffic was moving so slowly that particular day, many bus passengers, mostly rural migrants who had just returned home from work, were getting off the bus and walking home. Within the village, residents navigated their way through piles of bricks, sand bags, and rebar. Some parents held their kids on their backs so that the kids would not hurt themselves on the sharp objects littering the ground. Most of the construction sites were not cordoned off, and passersby were constantly on the lookout for falling bricks or tiles. The inconvenience of building construction in Dongsanqi continued deep into the night. Around 10 p.m., many construction workers were still at work. The sounds of drills and electric chainsaws could be heard in every corner of the village.

On May 29, 2010, I was invited by a friend to watch a musical play called *Voices of the Mobiles* (*liudong de xinsheng*). The performance was put on by the Tongxin Experimental School, an elementary school in Pi Village, which was an urban village in Chaoyang District. This school had been established in 2005 by the Beijing Workers' Home (*beijing gongyou zhijia*), an NGO that advocates

migrant workers' rights in Beijing. The purpose of this school was to provide a supportive learning environment for migrant workers' kids in the capital city. The musical that I was watching recounted the migrant kids' experiences of moving from the countryside to Beijing and of living on the city's urban fringes. The play was performed by the school's students, who apparently had written most of the play themselves. In one part of the play, the migrant kids as portrayed by the migrant students talked about how *tuji jianfang* haunted them and their families from village to village:

*I am not the only one on the move.
Classmates, friends, and teachers also keep coming and going.
Change is nonstop.
No time for goodbyes, and no time for hellos.
Every semester we have new classmates.*

*Because of relocation, we have an extra large bunch of new
classmates this semester.*

*Demolish! Demolish! Demolish! Demolish! Demolish!
Build! Build! Build! Build! Build!
Together let's Demolish! Demolish! Demolish! Demolish! And then
Build! Build! Build!
Uncle demolishes, demolishes, and demolishes. Dad builds, builds,
and builds.
Together let's Demolish! Demolish! Demolish! Demolish! And then
Build! Build! Build!*

*One new classmate's name is Ma Yueyue.
She said that her best friend, Ma Wei, attends school here.
The village she stayed in is going to be demolished soon, and that is
why her parents decided to move here.
In fact, this village is going to be demolished soon, too.
People say it will happen at the end of the year.
Now, people in this village are building houses like crazy.
Streets and alleyways are filled with sand and bricks.³²*

Tuji jianfang as a practice of reuse is paradoxical in terms of the way in which it shapes the interactions between demolition waste and the environment.

³² The recording of the musical can be found on website *Youku*:
http://v.youku.com/v_show/id_XMjE3NTA0MzI4.html

On the one hand, it helps to clean up the rubble that cities like Beijing do not want. On the other hand, it turns cities' peripheral villages, where the majority of the city's rural migrants live, into permanent construction sites, compromising the residents' well-being.

CHAPTER 3 THE RECYCLING CIRCUIT

This chapter examines the circuit of recycled building materials, such as metal scraps, plastic, glass, rubber, and insulation foam boards. The difference between recycled and the reused materials is that recycled materials go through industrial processes while reused ones do not. Iron scrap, for instance, is melted first before being made into products (such as rebar). The past sixty years have seen a steady increase in the amount of recyclables in Beijing's demolition waste. Buildings built before 1949 were mainly constructed with bricks, tiles, and wood beams. The amount of the recyclables that socialist-era demolition projects (see Chapter 1) produced was therefore insignificant. In the 1960s, construction companies in Beijing began to apply new materials to building construction, particularly structural steel. After economic reform, rubber (used for waterproof roofing), polystyrene boards (for wall insulation), stainless steel (for doors and window frames), aluminum (for window frames), and plastic (for advertisement boards) became popular in building construction and renovation. Demolition waste produced in the post-socialist Beijing therefore contains more and more recyclables.

My main argument in this chapter is that recycled materials contribute to the survival of rural industry in northern China. Township and village enterprises (TVEs) in Hebei Province (a province that encircles Beijing Municipality) utilize these materials as industrial inputs. By doing so, these rural enterprises are able to gain a competitive edge in an economy where state-owned enterprises (SOEs), particularly those at the national level, enjoy better access to raw materials.

Because of Hebei TVEs' demand for recyclables, waste sorting, a labor process that transforms waste materials into industrial inputs, is a vibrant part of Beijing's urban economy. In the city, a group of businesses called "recycling companies" have emerged. These companies establish "recycling stations" (*feipin huishou zhan*), or marketplaces for sorted recyclables, on the city's fringe areas. They make a profit by leasing out scrap yards in these stations to recyclers. The recyclers, who are mostly rural migrants, purchase recyclables from the city, conduct waste sorting, and sell sorted materials to TVEs in Hebei. Furthermore, the emergence of this economy of waste sorting greatly benefits villages located on the city's fringe. By leasing out village land to recycling companies to build up recycling stations, these villages are able to bolster their income streams.

3.1 Recyclables and Rural Industrialization in Hebei

Today, TVEs in Hebei are the main consumers of recyclables salvaged from demolition sites in Beijing. Reinforcement bars (rebar) and other scrap iron and steel end up in the cities of Tangshan and Renqiu, where they are used by steel mills to manufacture steel products; plastics – PVC, ABS, PPR PC, PPO, SBS, EVA, etc. – go to workshops in Wen’an, which make plastic resin; insulation foam boards end up in polystyrene factories in Shijiazhuang, Hengshui, and Langfang; rubber sheets (used for roofing) go to rubber manufacturers in Zaoqiang and Hengshui. Each type of recyclable has respective buyers in Hebei. Few recyclables from Beijing end up in landfills or incinerators.

In this section, I examine steel mills in Fengrun District, Tangshan Municipality, as a case to reveal how TVEs in Hebei become consumers of Beijing’s recyclables. I show that scrap iron and steel allows steel mills in Fengrun to compete with state-owned steelmaking enterprises, which monopolize cheap imported iron ore. This case study reveals that by utilizing recyclables as industrial inputs, TVEs in Hebei gain a competitive edge in a market where SOEs enjoy better access to raw materials. In other words, recyclables contribute to the survival of rural industries in northern China.

Iron Scrap and Development: The Case of Fengrun, Tangshan

Fengrun, located about 150 kilometers west of Beijing, is a rural district of Tangshan Municipality in Hebei Province. Although the place is rarely marked on any maps, its role in the development of cities and urban economies in northern China cannot be over-stated. Today, Fengrun is the home to northern China’s largest cluster of small steel mills (*xiao gangchang*).³³ These steelmaking

³³ In contemporary journalistic writings in China, “steel mills” refers to steel-making enterprises that have a production capacity below 300,000 tons per year. This term sets this group of steelmakers from another two types of steel-making enterprises: “mid-size steel-making enterprises” (*zhongxing gangtie qiye*), which have a capacity between 300,000 and 5,000,000 tons per year, and “giant steelmakers” (*daxing gangchang*), which have a capacity above 5,000,000 tons per year. But steel mills are different from other two types of steel-making enterprises also in terms of ownership and legality. Currently all “giant steelmakers” are owned either by a provincial government or a municipal government. People therefore also refer to them as “large state-owned steel-making enterprises” (*guoyou daxing gangchang*). In contrast, “mid-size steel-making enterprises” are either state-owned or TVEs (township and village owned enterprises), and steel mills are all TVEs. Unlike SOEs, TVEs do not have the obligation to surrender parts of the revenues to the governments. People therefore usually call those TVEs “privately-owned steel-making enterprises” (*mingying gangchang*). In addition, in 2003, in order to tackle with the problem of overproduction, the State Council decided to close down those steelmaking enterprises that have a production capacity below 100,000 tons per year. Most of the steel mills in

enterprises, mostly TVEs, are the major suppliers of rebar and hot-rolled steel in northern China (Figure 3.1). These two products respectively are the main material inputs for building construction and the manufacture of home appliances, such as refrigerators and washers. Steel mills in Fengrun use scrap iron and steel to manufacture products. Each day, they purchase thousands of tons of salvaged re-bar and retired machinery from Beijing and Tianjin. A secondary impact of the existence of steel mills in Fengrun is reduced waste disposal cost for cities in northern China.

The emergence of the steel mill cluster in Fengrun can be traced back to the 1990s. At that time, real estate booms started to take off in Beijing and Tianjin. Some villages and towns in Tangshan's rural districts, including those in Fengrun, built up simple production lines to manufacture steel products, such as channel steel and wire rods, for construction companies in Beijing and Tianjin. It is estimated that the number of steel mills in Tangshan jumped from 168 in 1992 to 334 in 1993 (Liu, 2003). The reason villages and towns in Fengrun chose steelmaking as their business has to do with the place's geographical proximity to Tangshan's urban center. The city of Tangshan has long been northern China's steelmaking hub. In 1943, the Japanese colonial regime, which at that time occupied northern and eastern China, established the Tangshan Iron and Steel Corporation (TISC). After the People's Republic was founded in 1949, the enterprise was nationalized. In 1952, the production volume of TISC reached 65,500 tons; it became the biggest provider of iron and steel in northern China (Liu, 1997: p. 21). In 1976, an 8.0-magnitude earthquake destroyed much of the city as well as TISC's facilities. Reconstruction of the city in the following decade, however, helped TISC's undergo a fast recovery and growth. Between 1985 and 1989, TISC was the biggest tax-paying enterprise in Hebei; in 1989, it became the 10th largest steelmaker in China (Liu, 1997: p. 7). As TISC grew, other steel-associated enterprises, such as steel processing and mechanics, also prospered in Tangshan. According to Li (2003), in 2001, the steel industry contributed to 38% of Tangshan's GDP and employed 17.8% of the city's workforce. People of Fengrun thus were no strangers to the craft of steelmaking. They were either former employees of steel-making enterprises or close relatives and friends to people who were working in the industry.

China therefore are operating without a license. In short, steel mills are illegal and privately-owned steel-making enterprises with a production capacity below 30,000 tons per year.



Figure 3.1 A steel mill in Xiaotun Village, Fengrun. (May 17, 2010)

The fever of building steel mills in Fengrun was itself also a factor that contributed to the growth of steel mills. Construction of a small steel mill (with production capacity below 100,000 tons per year) requires no less than 6,000 tons of steel, and some larger ones require as much as 20,000 tons. Mill construction stimulated demand for steel in Fengrun, which in turn drew more villages and towns in Fengrun to build steel mills. From the mid 1990s to the mid 2000s, Fengrun enjoyed a period of prosperity. As Dong Qian, a dealer of steel products in the Dajidong Steel Wholesale Marketplace, told me: “In the 1990s, anyone who had the money to build a steel mill eventually made some money. It doesn’t matter if the enterprise is small or big.”

Scrap iron and steel did not play a significant role in steel production in Fengrun in the beginning. In the 1990s, steel mills in Fengrun used iron ore to manufacture products. They purchase iron ore either from the nearby Qianan Iron Mine or from trading companies that imported iron ore from places such as Australia and Brazil. Steel mills in Fengrun usually bought iron ore collectively in order to negotiate better prices with mining companies and trading companies. In the early 2000s, however, things began to change. In 2003, China’s state-owned steel-making enterprises began to negotiate benchmark price agreements with global mining companies. These agreements allowed them to drastically reduce

production costs. In order to be able to compete with these giant SOEs, steel mills in Fengrun began to purchase scrap iron and steel from recyclers.

In the late 1990s, China replaced Japan as the world's largest consumer of iron ore. In 2003, it became the largest importer of iron ore. As demand for steel products continued to increase, state-owned steel-making enterprises felt that they were in a good position to negotiate benchmark prices with global mining companies. In the global iron ore market, benchmark pricing refers to a mechanism in which an iron ore mining company agrees to offer a steelmaker a favorable price in exchange for the steelmaker's commitment to purchase a fixed amount of ore over a certain period of time. This pricing mechanism was invented and promoted by Japanese steelmakers during the 1960s, when the country's economy took off. Each year, the Japan Iron and Steel Federation (JISF), which represents steelmakers in Japan, sometimes along with Eurofer, which represents steelmakers in Europe, would negotiate with the world's major iron ore mining companies to agree upon a benchmark price for the coming year. The benchmark price that they reach is often referred to as the "starting price." This starting price then served as the reference for steelmakers in other countries to purchase iron ore in the world market. With these benchmark price agreements, mining companies are able to expand faster, as they can secure bank loans much easier. In fact, benchmark price agreements have helped a couple western mining companies, such as Rio Tinto, Vale, and BHP Billiton, to grow into multinational corporations.³⁴

In 1999, China's ten largest steelmakers, including the TISC, following Japanese steelmakers, established the China Iron and Steel Association (CISA). Its purpose was to form collective bargaining power in the global iron ore market. In 2003, for the first time, China joined the JISF and Eurofer to negotiate benchmark price deals with the world's top three iron ore mining companies: Rio Tinto, Vale, and BHP Billiton. In 2007, China by itself signed the first benchmark price agreement of the year with Rio Tinto, Vale, and BHP Billiton. For the first time, China became the country that set the starting price in the global iron ore market.

The success of the state-own steelmakers in reaching benchmark price agreements put steel mills in a desperate position. The CISA, governed by the top ten state-owned steel-making enterprises, refused membership applications from any steelmakers with production capacity below one million tons per year. Without membership, steel mills could not purchase imported ore at the benchmark price. Instead, they had to pay the spot price, which was much higher, or purchase ore from domestic mines, which was more expensive. In the mid 2000s, then, there was a wave of steel mill closures in Fengrun. Wang Fengjun, a

³⁴ Yang and Zhang (2010), reporters from Xinshiji, provide a detailed account for how CISA's benchmark price agreements shaped steel industry in China and the global iron ore market.

reporter from the *21st Century Magazine*, wrote in 2004 that “90% of the steel mills here have been shut down. No smokestack in the area has smoke coming out.”

Facing a loss of market, steel mills in Fengrun started to look for alternatives. Some began to purchase scrap iron and steel from recyclers in Tangshan. Tangshan was one of the centers of heavy industry in northern China. Each year, retirement of outdated factory equipment generated not a small amount of scrap iron and steel. These materials became the steel mills’ means of survival. In 2004, the *Economy Magazine* wrote that about twenty scrap iron and steel recycling shops appeared in Huanggezhuang, a village located at Tangshan City’s southern fringe. These recycling shops purchased scrap iron and steel from enterprises in the city and sold the sorted materials to steel mills in Fengrun.

Nevertheless, Tangshan was a secondary city in terms of the amount of scrap iron it could offer. As steel production in Fengrun gradually recovered, the city could no longer meet demand for scrap. Steel mills in Fengrun then looked to other cities and towns for more scrap materials. At that time, the coming of the 2008 Olympics had raised the number of land redevelopment projects in Beijing to an all-time high. Beijing then became steel mills’ primary sourcing ground for scrap materials.

Ye Jun was a metal scrap recycler in the Dongsanqi Recycling Station in Beijing. He recalled the growth of the iron scrap market in Beijing in the mid 2000s:

I first came to Beijing in 1998. At that time, I had a relative who ran a small paper recycling business in the Dongxiaokou Recycling Station. I came to work for him during the winter, when there was not much work to do on the farm. For the rest of the year I stayed at my hometown [in Gushi, Henan]. I had my parents and kids there to take care of, after all. In the mid 2000s, the business of iron scrap recycling became very hot [hen huo] in Dongxiaokou. Most of the trucks that came to the recycling station were coming to pick up scrap iron. I then started to think about opening my own iron scrap business. [...] In 2005, I used my savings and money borrowed from my relatives to rent a yard space here at Dongsanqi. The business went fine. I got calls from Tangshan every two or three days. Two years later I brought my parents and kids to Beijing to live with me. Not only so that I can take care of them, but also because they can help in the business. We are all living in Beijing now. We don’t go back to Gushi often any more. We spend most of the Chinese New Year here in Beijing.

Scrap iron and steel collected from demolition sites - mostly rebar - can be used to produce low-grade steel products such as wire rods and hot-rolled steel. These products can be further used to manufacture construction steel, furniture, and household hardware. Scrap iron and steel are not suitable to produce high-grade products, such as cold-rolled steel or stainless steel, which require iron ore. This limitation, however, did not obstruct the revival of steel mills in Fengrun. As cities such as Beijing and Tianjin underwent an urban boom during the 2000s, there was a constant strong demand for low-grade steel products. By 2009, the number of steel mills in Fengrun exceeded 200; all together, they contributed 63% of the steel production in Tangshan (Ren, 2003).

Fengrun is not the only place in Hebei where steel mills cluster. The other two places are Fengnan (another district of Tangshan) and Renqiu (a county-level city located about 100 kilometer south of Beijing). Similar to Fengrun, around the mid-2000s, Fengnan and Renqiu also became destinations of scrap iron and steel. In the mid-2000s, therefore, a circuit of scrap iron and steel recycling was formed in northern China. Every day, thousands of tons of scrap iron and steel salvaged from demolition sites in Beijing and Tianjin were sent to steel mills in Fengrun, Fengnan, and Renqiu as industrial inputs. The steel products that the steel mills produced, mostly structural steel and rebar, were then sold back to Beijing and Tianjin.

The existence of steel mills troubles central-state officials. For them, the capacity to control the price and production volume of steel products is crucial for management of the national economy. Now, as steel mills managed to expand their share in the market, officials began to feel that they were losing this key capacity. Since the 2000s, then, state officials have been trying to curb the expansion of steel mills and to eliminate existing ones.

On December 23, 2003, the State Council issued *A Notice Regarding National Development and Reform Commission's Opinion on Blind Investments in Steel, Aluminum and Cement Industries*. It stated, "In recent years, in the steel industry there appears the phenomenon of blind investment and the expansion of low-quality steel production. Some places, with no consideration of the market and external conditions, aggressively invest in steel and iron production facilities. [...] The results of the phenomenon are over-production, waste of iron ore resources, misplacement of investment, and contradictions in the structure of the steel industry." To solve these alleged problems, the State Council set up minimum requirements for any local investment in a steel production facility: a sinter machine no smaller than 180m², a carbonization chamber taller than 4.3 meters, a blast furnace larger than 1000m³, a converter weighing more than 100 tons, and an electric furnace weighing over 60 tons.

In August 2004, under the instruction of the State Council, banks in Tangshan stopped extending loans to TVE steel mills. A couple months later, on August 10, the Tangshan Municipal Government further issued *Notice Regarding the Special Action to Ban Steel Mills and the Use of Scrap Steels*. In this notice, the municipal government declared that it would close down three types of steelmaking enterprises: (1) enterprises that use an electronic furnace smaller than 10 tons, (2) enterprises that use scrap iron and steel for its production, and (3) enterprises without a business license.

In 2007, the Ministry of Environmental Protection stepped in. On January 10, the ministry imposed a “regional restriction order” (*quyu xianpi*) upon the entire Tangshan Municipality. Under this order, governments in Tangshan had to suspend their reviews of all proposed steel-production facilities until existing steel production facilities were improved to meet certain environmental standards. The order resulted in the temporary closedown of about 150 steel mills in Tangshan.

These governmental attacks on steel mills, however, were largely ineffective. For county and district governments in Tangshan, steel mills provide thousands of jobs and were big taxpayers. They were therefore reluctant to follow the central government’s orders. Furthermore, steel mills targeted for closedown found their own way to survive. During the period of government inspections, they disassembled production lines and reassembled them, usually in another location, after inspections loosened. Today, steel mills in Fengrun, Fengnan and Renqiu remain a powerful player in northern China’s steel market.

3.2 The Economy of Waste Sorting

On November 4, 2009, I visited Dongxiaokou Recycling Station, which was at that time the largest recycling marketplace in Beijing, and arguably the largest in northern China.³⁵ A few days prior to the visit, I was conducting interviews on a demolition site in the Chongwenmen area of Beijing. I asked a trucker, who was about to leave the site with a load of scrap metal, where he was heading. He said “Dongxiaokou Recycling Station. Why? Do you have something to sell?” After I went home, I looked up the recycling station on a map. The recycling station was located about 15 kilometers north of Tiananmen Square. It looked huge. Google Map satellite images showed that the station covered an area of 84 acres, or 64 football fields. I decided to pay a visit to Dongxiaokou to see what the recycling station looked like.

I took a 40-minute subway ride from my rental apartment in Chongwenmen to Lishuiqiao, and from there turned west on Dongxiaokou Road and walked 2 km to the recycling station. The area surrounding the Lishuiqiao subway station was a

³⁵ Dongxiaokou Recycling Station was demolished in the summer of 2012.

newly developed urban area. Right next to the subway station there was a gigantic shopping center, called the Longde Square. It housed a Carrefour, a Starbucks, a McDonalds, a KFC, and a couple dozen other brand-name global retailers and restaurants. Not far away from the shopping center was the Tiantongyuan Residential Neighborhood, Asia's largest residential development project. The "neighborhood" was made up of about a hundred apartment towers, which now house a population around 400,000. Once I turned west on the Dongxiaokou Road, however, the frenzy of the city quickly receded. On the south side of the road were patches of farmland and tree plantations. On the north side of the road laid three villages: Zhongtan Village, Lu Village, and Dongxiaokou Village. The recycling station was located at the south side of Dongxiaokou Village.

I entered the marketplace from one of its dozen entrances on Dongxiaokou Road. Once I entered, I saw two rows of scrap yards extending in front of me on both sides (Figure 3.2). Scrap yards were separated by brick walls, wood sheets, or plastic sheets. Each yard was about 4,00 square meters in size. Within each of these yards was a one-story brick building. In the remaining spaces of the yards, I saw people sitting in front of piles of recyclables, separating the materials into different categories (Figure 3.3). In different yards I saw different types of recyclables. They were either scrap metals, plastic, glass, cloth, paper, foam board, or wood. Different types of recyclables were not mixed in one yard. I also saw laundry hanging outside some of the houses, and satellite dishes on top of some of the roofs. Apparently there were people living in the scrap yards.

At the end of the road was a truck scale. Next to the scale I saw a one-story row house that was apparently an office. This row house had four different rooms. Outside the door of one of the rooms was a signboard that read "Manager's Office." From where I stood I could see that on the wall of the manager's office hung a map that showed a rough layout of the marketplace. On the map there was a line of words that read "Fuyou Xinyuan Recycling Company."

The Dongxiaokou Recycling Station was indeed a huge marketplace. Later during my fieldwork I came to learn that it consumed one-fourth of the recyclables generated in Beijing, and there were around 20,000 people working in the marketplace every day (Liu, 2013). The area I visited that day in 2009 was, in fact, only a tiny fraction of the marketplace. The marketplace spread more than 1 kilometer westward from the eastern entrance where I had entered the station and was constituted of more than 700 scrap yards and a paper recycling plant. The Fuyou Xinyuan Recycling Company was only one of three companies that managed the market. The other two were Xinfu Recycling Company and Beijing Zhonghai Rongtong Recycling Company. The term "Dongxiaokou Recycling Station" was not the name of a single market institution, but referred to a cluster of scrap yards located around the Dongxiaokou Village.



Figure 3.2 Dongxiaokou Recycling Station. (April, 2010)



Figure 3.3 A plastic-recycling yard in Dongxiaokou Recycling Station. (July, 2011)

In Beijing, currently there are about 20 recycling marketplaces similar to (but smaller than) the one in Dongxiaokou. They are all managed by private firms like the Fuyou Xinyuan Recycling Company. Each day, these marketplaces purchase thousands of tons of recyclables and then sell sorted materials to TVEs in Hebei, such as steel mills in Fengrun. In this section, I examine the formation of these markets to elaborate how the utilization of recyclables by Hebei TVEs shapes the city of Beijing. I show that because of Hebei TVEs' quest for recyclables, waste sorting is a vibrant part of Beijing's urban economy. I highlight two empirical findings. First, waste sorting has become an important arena for the accumulation of capital. The late 1990s witnessed the emergence of "recycling companies" (*feipin huishou gongsi*). These companies build up recycling stations at the city's fringe and make a profit by leasing out scrap yards in the stations to recyclers. As these recycling companies grow bigger throughout the years, some of them undertake waste collection. Second, the emergence of the economy of waste sorting benefits villages located on Beijing's urban fringe. By leasing out underutilized village land to recycling companies, these villages are able to enhance their income streams.

The Emergence of Recycling Companies

During the socialist period, the Beijing Supply and Marketing Co-op was the controlling body under which there were the Beijing Waste Materials Recycling Company (BWMRC, *beijing feijiu wuzi huishou gongsi*) and other waste recovery companies in districts and counties of the municipality.³⁶ This body of state enterprises operated about 400 "redemption stations" (*feipin huishou dian*) across the city, where urban households, factories, and enterprises could bring waste materials to in exchange for cash or daily necessities, such as rice, soy sauce, or food stamps (Yang and Furedy, 1993). In its heyday, this system of municipal recycling employed about 13,000 workers and recovered around 600,000 tons of waste each year (Ibid). The types of waste recycled included, but were not limited to, beer bottles, metal scraps, plastics, paper, shoes, cloth, rags, and even human hair. Sorted waste materials were sent to state-owned factories in the city as industrial inputs.

After economic reform, the system of municipal recycling was gradually dismantled. The fiscal reform of the Chinese state propelled local governments to restructure their enterprises toward more profitable lines of business. The BWMRC and other waste recovery companies in Beijing began to focus more on the recycling of iron, steel and ferrous metals, which were in greater demand.

³⁶ Goldstein (2006) and Yang & Furedy (1993) provide detailed accounts for the system of municipal recycling in socialist Beijing.

During the 1990s, then, redemption stations were closed down one by one. In 1998, the municipal government renamed the BWMRC “Huifenghua Industrial and Trading Company.” This restructuring came with the municipal officials’ realization that recycling metals imported from foreign countries, such as Japan, US, and those in Western Europe, was far more profitable (Wu, 2003). After the restructuring, the system of municipal recycling officially entered history.

During the 1990s, as the municipal government gradually retreated from collection and sorting of recyclables, rural migrants began to step in and take up the work. These were mostly migrants from the poorest regions of the country: southern Henan, northern Anhui, Sichuan, and Xinjiang. Through the years, they formed a recycling network that is very different from the system of municipal recycling. While the BWMRC and other waste recovery companies in Beijing used to supply sorted materials to state enterprises in the city, the migrant recycling network channels sorted materials to rural enterprises outside Beijing.

More specifically, the migrant recycling network that has emerged since the 1990s is composed of three tiers of business: trash pickers, waste collectors, and recyclers. At the bottom of the network are trash pickers (*jian laji*). Trash-picking requires the lowest amount of capital to start: anyone with a bag can pick up trash on streets. Those migrants who trash-pick are mostly those who have just arrived in Beijing and do not have established personal contacts in the city. Above the trash pickers are waste collectors (*shou laji*). These are people who purchase recyclables from residential neighborhoods, commercial establishments and other enterprises in the city. They also buy recyclables from trash pickers. In comparison to trash-picking, collecting waste requires more capital. It requires a small amount of startup funds to purchase waste and to pay property companies (*wuye*) for the right to enter neighborhoods, which are usually surrounded by walls and guarded at their gates. Oftentimes waste collectors also have to buy off urban law enforcement officers (*chengguan*), who are known to supplement their incomes by harassing migrants without residence permits or business licenses. Waste collectors are usually migrants who have worked as trash pickers in the city for a few years and have a small amount of savings.

On top of the migrant recycling network are recyclers (*feipin huishou*). These people conduct waste sorting. The people I saw working in the scrap yards in the Dongxiaokou Recycling Station belonged to this group. By “waste sorting” I refer to the labor process of separating waste into different categories, such as separating scrap metal into cast iron, wrought iron, steel, copper, aluminum, aluminum alloys, or separating plastics into PVC, ABS, PPR, PC, PPO, SBS, and EVA. This labor process is central for waste recovery. For factories, unsorted waste is nothing but garbage. However, once materials are sorted, factories can use them to make products. In other words, waste sorting is a labor process that

transforms waste into industrial inputs. Demolition companies (see Chapter 2) often sell collected recyclables directly to recyclers. Recyclers are therefore the only ones in the migrant recycling network who have the opportunity to deal with demolition waste, whose production volume is much greater than household waste. In addition to purchasing materials from demolition companies, recyclers purchase recyclables from trash pickers and waste collectors. The amount of capital required for one to become a recycler is much greater than for trash-picking and waste collecting. To become a recycler, one has to have the ability to purchase waste materials in bulk. One also needs to acquire a plot of land, as the labor process of waste sorting requires space. An experienced recycler in Dongxiaokou told me that it requires at least \$20,000 RMB to become a foam boards recycler, \$40,000 RMB to become a plastic or paper recycler, and more than \$100,000 RMB to become a scrap iron and steel recycler. Migrants who work as recyclers are therefore mostly those who have a larger amount of savings. Most of them either have worked as waste collectors for years, or are second-generation waste collectors or recyclers.

The formation of the migrant recycling network during the 1990s was accompanied by the emergence of a group of businesses call “recycling companies.” Recycling companies are, at least in their initial stage of development, land brokers. They establish recycling stations, and make a profit by renting out scrap yards in the stations to recyclers to conduct waste sorting. The emergence of recycling companies in Beijing has largely to do with migrant recyclers’ difficulty in running their businesses in the city legally. The law requires recyclers to register their businesses with the government. In order to complete the registration, a recycler has to first acquire a business license (*gongshang yingye zhizhao*). A business license, however, is not something easy for migrants to obtain; in order to get a business license, one has to provide, among other things, proof of the right to use a business premise (which can be a lease or a deed) and a temporary residency card (*zhanzhu zheng*). To get temporary residency in the city, one has to first get a household registration report, which cannot be obtained unless one pays a visit to the government back in his/her hometown. Even if a migrant has gone through all the trouble and obtained all the required documents for the business license application, there is still a good chance for his/her application to be rejected. Many recyclers in Dongxiaokou talked about the hostility of urban officials to rural migrants. “The only thing that they said to me is that they do not accept business license applications from non-locals,” one recycler told me. Recycling companies offer recyclers an easy way out. Once a recycler signs a scrap yard lease with a recycling company, the recycling company obtains all the required licenses and completes the registration. In other words, recycling companies build their businesses upon the municipality’s

discriminatory practices against rural migrants.

Most of the recycling companies that I know of were established by Beijing locals. The recycling station in Houbajia was established by the Bajia Village Committee in 1992 as a village enterprise. The Shuluxin Recycling Company in Jinzhan County in Chaoyang was also a village enterprise, established by the village committee of Magezhuang. The Fuyou Xinyuan Recycling Company, Guangli Fuyuan Recycling Company, and Zhongzhi Xinyuan Recycling Company were established by a businessman named Li Bin, a native of the city's Chaoyang District, and his wife. The only exception is the Lantian Recycling Company in Dongxiaokou, which was established by a group of migrant recyclers. The emergence of recycling companies in Beijing during the 1990s is, therefore, by and large a story about Beijing residents trying to get a share of profit from the economy of recycling.

Recycling companies charge four types of fees from recyclers: rent, license fee, utilities, and administration/cleaning fee. The amount of rent that a recycler pays depends on the distance between the recycling station and the urban center. The closer a station is to the urban center, the more a recycler has to pay. Recyclers in Dongxiaokou, for example, pay an average of \$4,500 RMB per month to the recycling company. In Dongsanqi Recycling Station, which is about 2km farther from downtown, recyclers pay an average of \$3,500 RMB. License fee is collected to help recyclers obtain business licenses, which have to be renewed annually. Recycling companies collect license fees either on a monthly or yearly basis. The administration/cleaning fee is a charge that many recyclers scrutinize. Supposedly a recycling company should clean up the public area of a recycling station regularly and equip a station with firefighting equipment. In reality, few recycling companies pay much attention to either safety or cleanliness in their marketplaces. Latrines are cleaned once or twice a year and fire extinguishers are nowhere to be seen in most of the recycling stations.

Throughout the 1990s and 2000s, Beijing locals who ran recycling stations have aggressively tried to expand their businesses. They grew their businesses both horizontally (increasing the number of tenants) and vertically (stepping into the collection and the sorting of recyclables). The best example is the dramatic rise and fall of Li Bin in the 2000s. Li Bin and his wife, Zhen Junru, got into the business of recycling in the early 2000s. Until Li's arrest in 2009 for plotting a murder, this couple, along with Li's nephew Li Huazi, together built a recycling empire that is widely known to people living in the Changping District. The story of Li Bing vividly shows how waste sorting has become an important arena for the accumulation of capital.

There is scant confirmed biographical information about Li Bin.³⁷ We know that he is a native of Beijing's Chaoyang District and he married Zhen Junru in the 1990s. The couple established the Fuyou Xinyuan Recycling Company in 2002, and in the same year the company rented a piece of land from the village committee of Dongxiaokou to establish a recycling station. Rumor has it that Li's move into recycling had to do with his longtime involvement with organized crime. It was also said that Li never liked school. When he was a teenager, he befriended gang members in Changping and Chaoyang and got involved in group fights, theft, and destruction of property. Li and his gang friends sold stolen items to recyclers for cash. This is why, unlike most of the Beijing's residents, Li knew many recyclers in the city and had a good understanding of their businesses.

By the time I began fieldwork in Beijing in 2009, Li had been put in jail. His wife Zhen Junru, who is still the CEO of the Fuyou Xinyuan Recycling Company, refused an interview request. It is therefore difficult to confirm the rumor. What we do know, however, is that Li's decision to establish the Fuyou Xinyuan Recycling Company in 2002 took place in a wider context of urban redevelopment that led to the displacement of the city's recyclers. In 2002, the municipal government relocated a dozen urban villages along the city's Northern 4th Ring Road. This area used to house two of the largest recycling stations in the city: Wuhouqiao and Shunguili. Forced by village relocation projects, many recyclers had to find new places to run their business. Around that time, then, there was surging demand for scrap yards, which made building new recycling stations a profitable business.

Dongxiaokou, the village from which Li Bin rented a piece of land to establish his recycling station, was a quiet rural village at that time. The village was located on the north side of Dongxiaokou Road; on the south side of the road were fishponds, cornfields, and wheat fields. The village had been troubled by the problem of how to convert its farmland on the south side of the road to more productive uses. Prices for agricultural produce had been stagnant for a decade. Farming alone simply could not help increase villagers' income. This problem was solved in 2002, when recycling companies came to the village to negotiate land leases. In that year, the village signed land leases with four different recycling companies. One of them is Li Bin's Fuyou Xinyuan Recycling Company.

The piece of land that Li Bin rented from the village committee of Dongxiaokou was located at the east corner of the village. It was about 15 acres in size. On this piece of land, Li Bing built a couple dozen scrap yards. On the west side of Li Bin's station was the Xikai Recycling Station, which was established by migrant recyclers in the same year. Farther west were another two recycling

³⁷ I rely on information provided by recyclers in Dongxiaokou and Dongsanqi to tell Li Bin's story. I crosschecked each of the facts with at least three recyclers.

stations, established by the Xinfu Recycling Company and Beijing Zhonghai Rongtong Recycling Company, respectively.

Li Bin apparently did not settle for his company being just one of the recycling companies in Beijing. He wanted to expand his business and the source of revenues. About a year after he started his recycling business, he told Yang Yaofeng and Zhang Chuanbing, the managers of the Xikai Recycling Station, that he was interested in buying their business. Yang and Zhang, however, were not interested. Li Bin then threatened Yang and Zhang that if they refused to sell, he would send in gangsters to give trouble. Yang and Zhang eventually agreed to a deal with Li Bin. Li offered Yang and Zhang 30% share of the company, and he promised them that each of them would get an additional \$300,000 RMB bonus each year. In early 2005, Yang and Zhang gave up their share of the company and left Dongxiaokou. Many recyclers in the station believe that Li Bin used death threats to force them to leave.

In October 2003, Li Bin and his wife established the Guangli Fuyuan Recycling Company. This company rented a piece of land from Qijia Village, about 6km northeast of Dongxiaokou. This piece of land was about 16 acres in size, which Li Bin subdivided into 110 scrap yards. After this new recycling station is built, Li Bin owned the largest number of scrap yards in Changping.

In addition to expanding his business horizontally (increasing the number of tenants), Li Bin also expanded into waste sorting. Dongxiaokou was about 20 minutes' drive to Zhongguancun, an area that accommodates 23 universities and colleges. A great portion of the recyclables that came to Dongxiaokou, therefore, was scrap paper. In 2006, Li Bin met with paper recyclers in Dongxiaokou and told them about his plan to build a paper recycling plant. He asked these recyclers to invest in this project and to work for him. Again, Li did not take no for an answer. He dispatched gang acquaintances to threaten recyclers who refused the proposal. The paper recycling plant was built in 2007. After that, few scrap yards in Dongxiaokou sorted paper.

In 2009, Li Bin built a metal recycling plant on the land he rented from Qijia Village. This plant was 4,000 square meters in size and was equipped with three metal shearers, one baling machine, two portal jib cranes, and a steel-grasping machine. To build this plant, Li Bin terminated the leases with the migrant recyclers who were living in scrap yards. Many of them later became employees of the new plant.

In the summer of 2009, Li Bin rented another piece of land from Qijia Village. On this piece of land was a fishpond, which was owned by a villager named Han Guang. Han refused to give up his fishpond. After the village signed the land lease with Li Bin, Han continued to work on the pond. On June 22, on his way home from the fishpond, Han was stabbed by five assailants and died on the

way to hospital. On July 7, Li Bin was arrested for plotting Han's murder.

Behind its shadier aspects, Li Bin's story vividly shows how waste sorting serves as an entry point for the accumulation of capital. Municipal discrimination against rural migrants allows Beijing locals to demand a share of profit from recyclers. As capital accumulates, recycling companies further step into the labor process of waste recovery themselves. In Li Bin's case, he established recycling plants and hired migrant recyclers as workers. A number of recycling companies in Beijing, however, have gone even further. They offer building demolition services to land developers and sell collected recyclables to recyclers in their own stations. In other words, they are vertically integrating the chain of waste recovery.

Waste Sorting and Villages at the Urban Fringe

In the post-socialist period, SOEs' control over access to raw materials turned Hebei TVEs into consumers of Beijing's recyclables. TVEs' demand for recyclables further gives rise to the emergence of recycling companies in Beijing, which make a profit by offering spaces of waste sorting to migrant recyclers. The actors who benefit the most from the emergence of this network of recycling are villages located at the city's fringe.

In today's Beijing, all recycling marketplaces are located right next to "urban villages," or villages at the city's fringe (Figure 3.4).³⁸ For recycling companies, there are two main concerns when they establish recycling stations. The first issue is location. A recycling station has to be placed close enough to the city, where most recyclables originate. A recycling company would have a difficult time to find tenants if it placed a recycling station far from the city. Second, waste sorting consumes space. Recyclers need enough room to place unsorted and sorted materials. In post-socialist Beijing, the closest available land to the city is located at the urban fringe. Most of this land is the property of urban villages. To establish a recycling station, therefore, a recycling company often has to first rent a piece of land from an urban village.

For urban villages, leasing out land to recycling companies is a good deal. As farming can no longer bring reasonable incomes, many of these villages establish shareholding companies to take advantage of the urban market, which is now coming close to them. These village enterprises offer a wide range of services to the city, such as cheap accommodations, auto repair, restaurants, and light manufacturing. Establishing a shareholding company, however, inevitably involves risk. If the business of the company does not go well, villagers'

³⁸ Li (2004), Siu (2007), and Southern Metropolis Daily (2011) provide detailed analyses for the appearance of urban villages in reform China and their role in the political economy of development.



Figure 3.4 A view to Dongsanqi Recycling Station. The building cluster at the back of the recycling station is the village of Dongsanqi. In Beijing, all recycling stations sit right next to urban villages.

investment may be wasted. On the contrary, leasing out land to a recycling company is much less risky. Villages do not need to invest in anything; they only need to ask for rent from recycling companies.

Wang Shoushan is a resident of Dongxiaokou Village. He is about 60 years old, and has been living in the village since the 1950s. I know Mr. Wang through his nephew's wife, Little Zhao, who was one of my informants when I was conducting fieldwork in Beijing. Little Zhao works for a relocation company. After learning that I was interested in knowing about urban villagers' experience living with recycling stations (and, thus, recyclables), she introduced Mr. Wang to me. Wang has little complaint about the arrival of the recycling station in Dongxiaokou in 2003. For him, the village's land lease deal with the recycling companies has helped him and his family through some tough times.

Like most other villagers in Dongxiaokou, Wang was a member of the village's agriculture production team (*shengchan dadui*) during the socialist period. After the economic reform, the production team was disbanded, and Wang became a private entrepreneur (*getihu*), selling homemade tofu in a farmer's market in Changping District. In the early 1990s, after figuring that the income from selling tofu was too little to support his family, Wang decided to take a job in a food-processing plant. In this plant, Wang worked as a carpenter and technical support. One day in 2002, Wang passed out while working in the processing plant. He was hospitalized and diagnosed with hydrocephalus and subsequently was unable to continue working at the processing plant. The timing of the health problem could not be worse. At the same year, Wang's only daughter was accepted by a university in Shanghai. Expected expenses on tuition and fees put a lot of financial pressure on Wang. He did not have the option of quitting his job.

Seizing the opportunity of the Beijing Municipal Government's demolition program mentioned above, the Dongxiaokou village committee leased a couple dozen acres of land on the south side of the village to three recycling companies. For Wang Shoushan, the signing of these land lease deals was an event that ultimately put his financial difficulty to an end. With an improved string of revenues, the village committee established a pension program for the village's elders. The amount of pensions that Wang and his wife received turned out to be more than enough to cover their own living expenses and the educational expenses for their daughter. Wang then quit his job at the food processing plant. He now works at home as a sacrificial offering artist; he makes paper money, paper houses, paper iPhones and paper automobiles, and sells the products to funeral homes in Changping. This line of work demands good eyes and hand skills, but little physical strength.

In addition to bringing pension funds, the land lease deals also made Wang Shoushan a landlord. In recycling marketplaces, there are three groups of migrant laborers. The first group of laborers is recyclers, who sort waste materials into different categories. The second is truckers. They carry sorted materials from recycling stations to Hebei. The third group of laborers is porters (*banyun gong*), who help recyclers and truckers load and unload materials from trucks. Recyclers live in the scrap yards rented from recycling companies. Truckers and porters, in contrast, do not have a place to stay in the recycling station. They have to rent a room somewhere else. Like many other villagers in Dongxiaokou, Wang took full advantage of the expanding demand for rental apartments. He built twelve studio units on top of his *siheyuan* houses. From each unit, he was able to charge a monthly rent of \$300 RMB. The arrival of the recycling station in Dongxiaokou has greatly improved Wang and his family's livelihood.

CHAPTER 4 THE DISPOSAL CIRCUIT

On the night of July 19, 2011, I went with Zhang Kangsheng, the founder and manager of Meiman Jiayuan Garbage Removal Company, for a trip to visit Beijing's debris dumps. Boss Zhang had been in the business of debris disposal in Beijing since 1998. He worked first as a trucker for a couple years. In 2005, he used accumulated savings to establish the company. Its main business was debris disposal. It acquired contracts from demolition companies and subcontracted the work to affiliated truckers (the debris trucks were owned by the truckers, not the company). But Zhang also had a plan to expand the company's business to garbage removal for residential neighborhoods and commercial establishments. A month earlier he had just signed an important garbage-removal contract with the Landgent Center, a new shopping mall in the city's Central Business District (CBD). I met boss Zhang a week earlier in a public forum about Beijing's garbage held by the Green Beagle, a Beijing-based environmental NGO. Zhang was invited to deliver a talk based on his experiences as an entrepreneur who worked on waste, and I was asked to moderate the talk. After learning that I was doing research on Beijing's demolition waste, Zhang happily agreed to let me follow his truckers to debris dumps.

Our trip started at Houshayu, a township in Shunyi District about 40km northeast of Beijing's downtown center (adjacent to the city's 6th Ring Road). The area was sparsely populated and Boss Zhang told me that there were at least three debris dumps in the area. We came here to meet with the truckers: four men, two women, and a 2-year-old boy. They were two married couples and two male helpers, and the boy was a son of one of the couples. Because debris trucks are not allowed to be on the road during daytime, most truckers choose to live close to debris dumps. This way they can arrive home quickly after work. Our trip thus started at the place where the truckers were living. We were going to pick up debris from downtown and return later to dispose of it. Boss Zhang explained to me that truckers usually bring their wives to work because they were afraid of ghosts believed to haunt dark countryside roads. In addition, he said that having company was important for this line of work because one would easily fall asleep while driving alone. These, however, turned out to be secondary reasons. Later, during my conversations with the truckers, I learned that truckers were paid for the number of the rounds that they make each night. In other words, regardless of the number of workers in a truck, truckers are paid at the same rate per round. While hiring an additional worker would cost more, many truckers prefer to just bring their wives to help. Tonight boss Zhang hired two 5-ton trucks. He paid \$300 RMB for each truck for one round trip to the downtown. One of the couples

brought their son because they could not find a person to take care of the boy.

That night we picked up debris at the New World Taihua Serviced Apartment Building, a property centrally located in the city's Chongwen District. The manager of the property had just finished reconfiguring the layout of three of its floors; our job was to remove the garbage that was left from the renovation project. This was not a demolition site per se, but the garbage would be dumped in the same place as the building debris: debris dumps. From the New World Taihua Service Apartment, we picked up about 30 bags of cement, wood scraps, a dozen paint buckets, and broken bricks. By the time we cleared up all the floors and got ready to leave, it was about 2AM.

On our way back to Houshayu, Boss Zhang began to open up and chatted about his past experience as a debris trucker. "You know, compared to normal drivers, we truckers look at very different things when driving," he said. "When a normal driver drives, he only looks at the one or two vehicles that are immediately in front of him. He does not look any further. But when we truckers drive, we have to look at places that are 50 or even 100 meters in front of us. Urban Law Enforcement Officers (ULEO, *chengguan*) are everywhere. They are like lions hunting sheep. Once they catch us, the income from a night of work is gone." "When a *chengguan* approaches a trucker," Boss Zhang further explained, "he won't say 'you are speeding' or 'your truck is overloaded,' he will just bluntly tell you 'give me \$2,500.' If you dare to ask why, he will give you a \$3,500 speeding ticket." Boss Zhang's talk apparently raised the interest of the driver of the truck that we were sitting in. The driver said, "Let me tell you about *chengguan*. *Chengguan* are gangsters wearing uniforms. They gamble and play mahjong day and night. When they are out of money to gamble, they come out and hunt truckers." "Well, they do understand the art of hunting, though," Boss Zhang added, "They know that they will have more meat to eat only if the sheep gets fatter. So they don't hunt us every day. They keep us alive. They come out to hunt truckers once or twice a month."

At around 3AM, we were back at Houshayu, and entered a village called Shaziying (Sand Camp Village), which was one of the debris dumps in the area. We passed through an entrance and drove up a little hill. The driver told me that he has been coming to this dump since 2006. He said that the dump used to be a quarry, and now it was almost filled; it will be closed soon. On the top of the hill there was an excavator. It was raining hard at that time, and under the bucket of the excavator there were two people sitting on the ground, trying to take shelter from the pouring rain. One of them came out from under the bucket and looked at our truck. He then said "ten dollars [RMB]." The driver gave the person ten dollars, and then started to unload the stuff from the truck. There was no negotiation. Boss Zhang later told me that we were charged only \$10 RMB

because there were a lot of wood scraps on the truck, which can be sold to recyclers.

On our way out of the Sand Camp Village, I asked why we didn't try other dumps to see if they would charge less. Boss Zhang told me that in the business of debris dumping, there was an unofficial "full in, empty out" (*quanche jin, kongche chu*) rule. It requires that once a debris truck enters a dumpsite, it should not leave until it discharges all the materials. "You don't want to mess around this rule," the driver said, "If you do not discharge all the materials, debris dump managers will call *chengguan*, and you will be in trouble." "Debris dumpsite managers and *chengguan* are always working together," Boss Zhang added.

Debris (*zhatu*) is building waste that demolition companies do not find worthwhile to collect. It is mainly composed of waste concrete, cement, and broken bricks and tiles. But within a bunch of debris one can always also find a small amount of recyclables, such as pieces of glass, metal, wood, rubber layers, and plastic sheets. These recyclables, however, are oftentimes so small that demolition workers do not bother to collect them. Debris is the burden of demolition companies. Demolition companies have to pay debris truckers for its disposal.

Each year, the municipality's Office of Building Debris publishes a list of "designated debris disposal sites" (*zhiding zhatu xiaonachang*). These official dumpsites, mostly located in remote countryside, are not under direct administration of the municipal government. Instead, they are operated by villages with which the municipal government has contracted for debris disposal. By law, debris truckers can dump debris in no places other than these official dumpsites. In reality, however, most debris truckers dump debris in villages that are closer to the urban center, particularly those along the city's 6th Ring Road. The majority of the city's debris is disposed of illegally.

Illegal dumping has been an issue that dominates discussion about Beijing's debris. In 2009, for example, in an internal document, titled "Guidelines regarding the Management of Building Garbage," sent by the Office of Building Debris to the Municipal Urban Administration Commission, the office proposed the idea of building a "Green Truck Fleet." In this project, the government would provide no-interest loans to debris truckers to purchase a new generation of debris trucks, which was to be equipped with a more energy-efficient engine, a bed cover, and a GPS device. The GPS device, one staff at the Office of Debris excitedly explained to me, would allow the government to track the locations of the trucks at any time.

Two closely linked assumptions underlie the current debates about debris. The first assumption is that debris is an external cost of urban development. The fact that truckers bring debris to places where they consider more convenient and cheaper for disposal seems to suggest that debris is something no one wants. In

news reports we thus can often read that debris is a “time bomb,” is “swallowing up the city,” or is occupying precious land space.³⁹ The second assumption is that villages where the city’s debris is dumped are victims of illegal dumping. Since debris is a burden, these rural villages must have been accommodating debris unwillingly. From time to time reports appear in Beijing’s newspapers about villagers waking up to find piles of debris mysteriously lying on their farms.

My goal in this last chapter is to demonstrate that even debris, which has no market value, is treated as a resource. My story is the following: Most of the rural villages that now serve as the city’s debris dumps – be it legally or illegally – were originally the city’s sand and gravel mining grounds. In the early 2000s, under tremendous pressure to improve the city’s air quality before the 2008 Beijing Olympics, the municipal government initiated a series of closures of the city’s sand and gravel mining industry. In response, mining villages turned quarries into debris dumps. By doing so, they were able to charge dumping fees from debris truckers, and thus continue their participation in the city’s real estate boom. In other words, debris has mitigated the impacts of rising environmentalism on the city’s rural areas. Furthermore, since most of the city’s debris ends up in former sand and gravel mining pits, debris dumping does not consume land. Instead, it fills up mining pits back to the ground level; it is therefore a process of land reclamation. After mining pits are filled with debris, new neighborhoods and suburban parks are built on the top. That is to say, debris dumping has created land for future development and speculation.

4.1 The Conversion of Mining Pits into Debris Dumps

Nature provides resources to the city. In return, the city gives back its garbage to nature. What is dramatic about this unequal exchange is that the giving and the taking occur at the same place.

Wang Jiuliang, “The Garbage Labyrinth”

During the 1990s, as the establishment of the urban land leasehold market ignited ferocious construction booms in Beijing, many villages surrounding the city, particularly those located along river basins, where there were rich deposits of sand and gravel, started to turn farmland into sand and gravel mines. For them, selling sand and gravel was far more lucrative than farming. Most of these villages

³⁹ On May 12, 2010, the *China Youth Daily*, for example, published an article by Lin Yan, which discussed the issue of demolition waste in Beijing. The title of the article was “Building Garbage is Swallowing Up Our City.”

entered mining simply by opening up their farmlands for excavation. They charged mining fees to miners sent by construction companies and building component manufacturers. However, a few villages have managed to build up their own production lines. Yushuzhuang Village (Elm Tree Village), in Fengtai District, for example, established the Yushuzhuang Building Component Factory. It used sand and gravel beneath the village's farmland to manufacture building components. During the 1990s, the enterprise successfully expanded its product line, from simple pavement bricks to floor plates, cement tubs, and prefabricated wall panels.⁴⁰

The mining of sand and gravel substantially altered the landscape in the municipality's rural areas. As villages rushed to turn farmland into quarries, gigantic ground holes began to appear one after another in the countryside. One extreme case is the mining pit at the Dongheyang Village in Beijing's Fengtai District (Figure 4.1). This mining pit was about 114 acres in size and 100 feet deep. Rural villages' dream of getting rich through sand and gravel mining, however, did not last long. In 2001, Beijing won the bid to host the 2008 Olympic Games. Because of concerns over the city's poor air quality, air cleanup became a top priority for the municipal government. The imperative to improve the city's air quality made the sand and gravel-mining industry a target. Many officials believed that the development of the industry was a major cause of the city's air pollution problem. In the years that followed, sand and gravel mining villages faced a series of policies that aimed to eliminate the sand-and-gravel mining industry in Beijing.

In November 2001, the municipal government issued *The Implementation of Measures for the Control of Air Pollution in Beijing (Seventh Stage)*. This document outlined a series of air cleanup tasks to be accomplished by government bureaus and by district and county governments within the municipality. The first task listed in the document was the closing down of unlicensed sand and gravel mining sites and those along the city's major waterways. Municipal officials apparently wanted to see fast results. It ordered bureaus and district governments to shut down all targeted mining sites by the end of November 2001, one month after the document was released.

Three weeks later, the Beijing Municipal Bureau of Land Resources and Housing Administration, together with the Bureau of Water Resources, further issued *The Plan for Closing Down Sand and Gravel Mining Sites within the Municipality*. In this plan, in addition to emphasizing one more time the determination to crack down on unlicensed mining sites, the government further announced that it would no longer issue new mining licenses or renew existing ones. The objective, as it was put bluntly in the *Plan*, was to eliminate the local

⁴⁰ In ZBDY (2008), Li Shufu, the chair of the village committee of Yushuzhuang, provides his personal account on the development of TVEs in the village.



Figure 4.1 A debris dump on the west bank of Yongdin River in Beijing's Fengtai District. The dump used to be a quarry. (Courtesy of Wang Jiuliang)

sand and gravel mining industry by the end of 2003.

The first wave of crackdowns did not drive out sand and gravel mining businesses completely. As the lead-up to the Olympics prompted a new round of construction fever in Beijing, some rural villages did not give up on their mining enterprises. They closed down mining sites ahead of inspections and reopened when inspections loosened up. Thus, in April 2005, the municipal government decided to initiate a new round of inspections and closures. This time, the government put pressures on construction companies. In April, the Beijing Municipal Bureau of Land Resources issued *The Notice on Stopping Illegal Sand and Gravel Mining in Beijing*. In this notice, the government ordered construction companies to stop purchasing sand and gravel from unlicensed sellers. Since that by that time all the mining licenses issued by the Beijing municipal government had already expired, the notice made it illegal for construction companies to

purchase sand and gravel from mining enterprises within the municipality. Furthermore, the municipal government also tried to demonize the industry through public campaigns. In the *Notice*, it instructed bureaus and district and county governments to “fully utilize media such as Beijing Daily, Beijing TV, local cable news networks of districts and counties, and propaganda boards to propagate the reasons and the goals of the remediation actions. Citizens should be educated to follow laws and administrative orders. Everyone should be aware that the ultimate goal is to hold a high-quality and green Olympics, and it is everyone’s responsibility to struggle against the illegal mining of sand and gravel.”

“It was a very difficult time,” recalled Li Shufu, the party chief of Elm Tree Village, “we were much saddened because we had to leave all the sand and gravel in the ground forever” (ZBDY, 2008: p.173). The challenge that these mining villages faced, however, was far more severe than leaving valuable resources in the ground. Years of excavation had destroyed farmland. Returning to farming was not an option. These villages, which now possessed nothing but hollow ground holes, had to find a way to survive.

Debris provided these mining villages with the solution. At the time, debris truckers faced the problem of increasing costs for debris disposal. Because the city’s official debris dumpsites were located in remote countryside, many debris truckers, in order to save gas, disposed of debris in places closer to the city. The illegal dumping by debris truckers ultimately triggered the practice of trucker-hunts by Urban Law Enforcement Officers (*chengguan*) in rural areas. *Chengguan* is an awkward bureaucratic invention in China. In 2001 and 2002, municipalities across China established Urban Law Enforcement Bureaus in the name of fighting low-level crimes, such as traffic violations and unlicensed street vendors. All levels of the local government, from municipality, district, county, down to township, all have their own *chengguan* offices. These bureaus are not part of the police force, however. They are financially independent municipal enterprises. Many believe that the *chengguan* system was established to provide jobs to layoff SOE workers in cities.⁴¹ In Beijing, illegal dumping of debris gave *chengguan*, particularly those of the county and township governments, the opportunity to enhance revenues. They deploy personnel at night in dark countryside roads to collect fines from debris truckers who dispose of debris in the wrong place. Truckers thus found it more and more costly to dispose of debris.

Former sand and gravel mining villages took the problem that debris

⁴¹ In Beijing, the Urban Law Enforcement Bureau has received a lot of criticism due to its officers’ alleged abuse of power, corruption, and excessive use of violence. Its reputation has sunk to such an extent that the term *chengguan* become an adjective in people’s everyday conversations. “Don’t be too *chengguan*” is an appeal not to bully or to terrorize. In other words, *chengguan* has become synonymous with violence.

truckers faced as an opportunity to restructure the village economy. They turned quarries into debris dumps, and charged dumping fees from debris truckers. Hollow ground holes now became these villages' assets.

Former sand and gravel mining villages entered the business of debris dumping through a couple different routes. Some villages managed to sign contracts with the municipal government, and thus acquired the official status as the city's "designated debris disposal sites." This was arguably the best-case scenario, as these villages can openly charge dumping fees from truckers. In addition, once a village becomes an official disposal site, it immediately has many reasons to request funding from the municipal government. The municipal government, for example, mandated that no debris trucks are allowed to be on the road between 6 AM and 9 PM. Villages can, therefore, ask for funds in the name of improving road lighting. Moreover, debris trucks are much heavier than normal vehicles. Thus, villages can request funds for road hardening projects. These piggybacked funding supports have been important to villages that serve as the city's official debris dumpsites. Li Village in Changping District, for example, signed a debris disposal contract with the municipal government in 2002. In 2003 and 2004, it successfully secured a total of 6.2 million RMB from the municipality through a series of road and lighting improvement projects (ZBDY, 2008: p.338). The village used the funding to build a new road that connects the village to one of the city's major expressways: the 6th Ring Road. According to Qing Fusheng, the party secretary of Li Village, the road "has played a decisive role in improving the development of the village and its surrounding areas" (ibid).

Not all the previous mining villages were able to sign debris disposal contracts with the municipal government, however. The Beijing Solid Waste Administration, after all, has never been a resourceful municipal agency. Each year it is only able to sign a handful of debris disposal contracts. Those villages that were not able to secure a contract with the municipal government had to run the debris dumpsites illicitly. Some villages run illicit debris dumps by masking the business with other names. Elm Tree Village, for instance, established a "Sand and Gravel Management Center" (*shashi jingying zhongxin*) in 2003. The village claimed that the business of this village enterprise was retrieving sand and gravel from foundation trench soils disposed by construction companies. In other words, the enterprise was supposed to be a recycling business. To make it look real, the village even put a vibrating screening machine and a sand washing machine adjacent to the dump. In reality, this "management center" was a debris dump. Most of the trucks arriving here came from demolition sites rather than construction sites. In addition, no one had seen the vibrating screening machine and the sand washing machine in operation since the management center acquired its business license. The debris dump apparently served Elm Tree Village well. Li



Figure 4.2 A quarry in Liangjiadian Township, Yutian County. (May 2010)

Shufu, the village's party secretary, revealed that in 2006 the "Sand and Gravel Management Center" had total revenue of 11 million RMB. "It was the most profitable business among all the enterprises that the village owns," he said (ZBDY, 2008: p. 173).

The dumping fees that villages charge truckers depends on two factors. The first factor is the distance between the dumpsite and the city. Villages located farther away from the urban center (the area within the 4th Ring Road) charge less. This is because it costs more for truckers to travel to more distant villages. The second factor is the amount of recyclables that one truck carries. Villages charge less for trucks that carry greater amounts of recyclables. This is because recyclables can be sold to recycling marketplaces (see Chapter 3) for extra cash.

For those villages that accommodate debris, there is the problem of truckers shopping around for cheapest dumping fees. Many of the former sand and gravel villages are located along the municipality's river basins. Within a given area,

therefore, oftentimes one can find more than one debris dump. Truckers shopping for lowest dumping fee is a problem because it can drive down revenue. Villages solve this problem by putting in place the rule of “full in, empty out” (*quanche jin, kongche chu*). As mentioned earlier, this rule requires that once a debris truck enters a dumpsite, it cannot leave until it discharges all the materials. Villages enforce this rule by forming an alliance with *chengguan*. They report those truckers who violate the rule to *chengguan*, who will then come up with an excuse (usually overloading or speeding) to fine the trucker. Debris dumpsite managers and *chengguan*, as Boss Zhang said, “are always working together.”

It is doubtful whether the municipality’s air cleanup efforts in the early 2000s were effective. At the time of this writing, reports of the city’s air pollution hitting hazardous levels have filled the news. What is certain, however, is that the air cleanup efforts profoundly transformed the metabolism of the city’s construction industry. They forced villages that formerly provided sand and gravel to convert their mining pits into debris dumps. Meanwhile, villages farther away, particularly those in nearby Hebei Province, became the new sand and gravel providers. In hilly Yutian County between Beijing Municipality and Tangshan City, for example, a large number of new sand and gravel mining sites were set up along the Yan Mountain Range (Figure 4.2).

4.2 Debris and Rent

Dumping fees comprise only one of two types of income that debris brings to former sand and gravel mining villages. The other is rent from migrant scavengers. As mentioned earlier, within debris, one can always find a small amount of recyclables: scrap iron and steel, plastic, wood, glass, etc. These materials can be sold to recycling stations (see Chapter 3) for cash. Villages that run dumpsites do not directly engage in the collection and sale of recyclables. Instead, they either lease out the dumpsites to scavengers, or charge scavengers an entrance fee to the dumpsite. In doing so, they further enhance village revenues.

Shang Huage is a reporter from the *Phoenix Daily*. On the night of July 18, 2011, one day before my visit to Sand Camp Village, Shang was taken by Boss Zhang to the same trip. After the trip, Shang wrote an article, titled “The Chaos of Building Garbage Management in Beijing,” to describe his experience. According to Shang, all the scavengers on the dumpsite of the Sand Camp Village were rural migrants. Shang wrote that as soon as the debris truck that he was in arrived at the dump, a group of a dozen scavengers, wearing headlamps and gloves, suddenly appeared from the dark (Figure 4.3). Some of them hold magnetic sticks in their hands. After the driver unloaded the truck, the scavengers quickly sorted through



Figure 4.3 A scavenger working on the debris dump on Sand Camp Village. (Courtesy of Shang Huage)

the materials. They took away wood scraps, plastic, glass, and all sorts of metals. One of the scavengers that Shang met that night was Yang Yujun. Yang hailed from Sichuan Province. She and her husband now lived in a rental apartment near the dump. Yang's husband worked in construction sites and demolition sites during the daytime, and Yang trash-picked in the debris dump at night. Yang told Shang Huage that she sold the recyclables that she collected to a recycling marketplace nearby. Yang paid the manager of the dumpsite an entrance fee each time she came to trash-pick. She did not reveal how much the entrance fee was, but she told Shang that she spent about half of the revenue that she earned from scavenging on gaining access to the dump.

Not all migrant scavengers on Beijing's debris dumpsites, however, directly participate in the collection of the recyclables. On some larger debris dump, a hierarchy of rent-seeking is developed to organize the work of scavenging. Migrant scavengers with experience and capital rent dumpsites from villages, and

sub-lease the place to scavengers with less or no capital to collect materials. Wang Jiuliang is a Beijing-based photographer and film director. He has been documenting municipal and informal garbage dumps in Beijing since 2008. One day, on a debris dump in Dongheyan, a village in the municipality's Fengtai District, he bumped into a community of about 2,000 scavengers. These scavengers, mostly migrants from Sichuan, Henan, and Anhui, were living on the dump in self-built houses (Figure 4.4). Wang spent a couple of months getting to know these scavengers and photographing their everyday lives. In an article published in *Southern Weekly* on June 24, 2010, Wang provides a detailed account of how the work of scavenging in Dongheyan is organized:

Those people who control the dump are migrants from Sichuan, particularly from Wen'an County. They work on top of the dump. In contrast, migrants from Anhui and Henan are like guerrillas. They work at the bottom of the dump, picking up materials left by Sichuan scavengers. Scavengers from Anhui and Henan are therefore called "the bottomers" (xiakeng de). "The bottomers" and "the uppers" (shangkeng de, referring to Sichuan scavengers) have separate territories; they seldom cross the boundary. All the houses on the dump were built by Sichuan scavengers. Anhui and Henan scavengers rent rooms from these Sichuan "land lords"; each room costs \$120 RMB per month.

Among the Sichuan scavengers, who control the dump, there also exists a hierarchy. At the bottom of the hierarchy are trash-pickers, who work for "the fourth bosses" (si laoban). These fourth bosses rent a couple dozen square meters of land on the dump [from the "third bosses"]; each square meter costs \$100 RMB. Trash pickers pay these fourth bosses 70% of the revenue that they earn. [The fourth bosses] are responsible for making contact with truckers. If there were no truck coming, there would be no work to do. Above the "fourth bosses" are the "third bosses," who rent a couple hundred square meters of land [from the second bosses]. These third bosses do not work. They all have cars and wear clean clothes. They play mahjong on top of the dump day and night. The "second bosses" (er laoban) are people who rent the whole dump from the "big boss" (referring to the village committee of Dongheyan). These second bosses together pay the big boss about \$10 million RMB each year. Except when they collect rent from the "third bosses," these "second bosses never come to the dump. On the top of the hierarchy is the big boss. In addition to collecting rent from the second bosses, the big



Figure 4.4 A community of scavengers living on the debris dump of Dongheyuan Village. (Courtesy of Wang Jiuliang)

boss also collects dumping fees from truckers. The dumping fees provide the big boss an addition of a couple million RMB of revenue each year.

For former sand and gravel mining villages, debris is valuable. It allows them to charge not only dumping fees from truckers, but also rent from migrant scavengers. On debris dumps, migrant scavengers collect recyclables, and sell the materials to recycling market stations. Debris dumps are not just final destinations of debris, but also lively workplaces.

4.3 Debris and Land Reclamation

Since most of Beijing's debris ends up in former sand and gravel mining pits, debris dumping – be it legal or illegal — does not consume land. Instead, it fills up mining pits back to the ground level; it is a process of land reclamation. For former sand and gravel mining villages, land reclamation is free of cost. The city pays dumping fees to these villages; not the other way round. After former mining



Figure 4.5 Yushuzhuang Park in Elm Tree Village, Fengtai District. The park used to be a 30-meter deep mining pit/debris dump. (July 2011)

pits are filled, on top of the dump new enterprises, parks, and houses are built. In other words, debris dumping creates new land for development and speculation.

One example of this process of land reclamation is Elm Tree Village in Fengtai District, located about 12km southwest of Tiananmen Square. As mentioned in the first section, in the mid 1980s, in an effort to improve revenue and create jobs, this village established Yushuzhuang Building Component Factory. A 37-acre mining pit was formed as the result of years of excavation. In 2002, facing municipal government bans on sand and gravel mining, the village turned the mining pit into a debris dump. Debris dumping then became the village's largest source of revenue. Two years later, as the debris dump was half-filled, the village committee began to worry about what to do once the pit was completely filled. The committee then invited Ji Huailu, a professor of architecture in Tsinghua University, to design a park. Ji is an expert in the history of Jiangnan gardens, a style of traditional Chinese gardens characterized by artificial lakes and sculptured rocks. For a long time, Ji had been looking to construct a traditional Jiangnan garden in Beijing. Ji and his Tsinghua design team filled up the remaining pit with water, and built a pagoda and a dozen pavilions along the

artificial lake (Figure 4.5).⁴² Soon after its opening in 2010, the park received media attention. Elm Tree Village, once a mining ground and a debris dump, has now become a tourist attraction in the city's southern suburb.

Another example is Dongheyan, the village where the photographer, Wang Jiuliang, documented the lives of scavengers. In 2009, Wang brought his photo series, titled *The Edge of the City (chengbian)*, to the Lianzhou International Photography Exhibition. He won the first prize in the exhibition's competition, and the life of scavengers in Dongheyan soon received nation-wide media attention. In order to avoid spotlights and criticism, the village closed down the dump and tore down all the self-built houses where scavengers used to live. The 2,000 scavengers thus had to either go back home or find another dump to scavenge. At that time, the dump was about to be filled. The village then leased out the land to a driving school. The driving school used the land as an exercise field for its students (Figure 4.6). In 2011, the municipal government announced it would host the 9th China International Garden Exposition in 2013. Dongheyan and a couple nearby villages were chosen as sites for the event. The dump has now been transformed into a place of trees, flowers, and artificial lakes. It will greet its first visitor in May 18, 2013.



Figure 4.6 An exercise field was built by a driving school on top of the debris dump in Dongheyan. (Courtesy of Wang Jiuliang)

⁴² Ji explained his design concept for the park in a conference paper titled “Rooting in Tradition—Building Garden Cities with the Heritage of Chinese Culture: The Practice of Yushuzhuang Park in Beijing” (2006).



Figure 4.7 A view to the 9th China International Garden Exposition in Fengtai, Beijing. (Beijing Daily, April 20, 2013)

CONCLUSION

This study was set out to interrogate the role of waste in the political economy of development in post-war China. I have examined materials from demolished building—which constitutes the largest part of China’s urban waste—as a case to carry out the investigation. The study put its focus on Beijing, a city that has been the country’s epicenter of urban demolition since the founding of the P.R. China in 1949. Using a commodity chain approach, I have traced the flow of the materials from their point of origin, that is demolition sites, to the final destinations of consumption and disposal. I described the network of businesses and institutions that channel the material flows, as well as the people who are involved in the network; I have also examined how this network has significantly changed from the Mao to post-Mao eras. Empirical findings presented in the proceeding chapters can be summarized as the following:

- (1) In socialist Beijing, used building materials, or what the contemporary would call “demolition waste” or “building garbage,” contributed to the modernization of the city. State bureaus and enterprises actively engaged in the collection and recovery of the materials. To monopolize demolition waste, they further forbade the unauthorized collection and sale of the materials. Such a regime of state building recycling channeled most of the salvaged building materials to state enterprises and agencies in the city, who then used the materials to accomplish production goals and to construct public urban projects. This regime of state building recycling created a distinctive material geography: that most used building materials stayed at the urban center.
- (2) In the reform period (1978–present), in contrast, peripheral towns and villages have become the main consumers of Beijing’s demolition waste. Facing policies that jeopardize their positions in the market, villages and towns surrounding Beijing come to appropriate materials considered by the city as waste, including used building materials, from urban areas. For them, waste materials provide the important means of opening up opportunities for growth. In other words, in the reform era, used building materials from Beijing contribute to the development of the rural economy in northern China.
- (3) From the socialist to post-Mao eras, thus, the labor process of un-

building (that is, the process of stripping a building down and of removing the resulting materials from its original location to another location) has always been a value-adding activity: it gives used building materials a second life. In reform China in particular, the recovery of demolition waste has become a vibrant part of the urban economy. In urban areas, businesses emerge to organize the collection, sorting, and transportation of waste materials. These businesses purchase used building materials from property owners in the city, help city governments reduce the costs of disposal, and create jobs for the city's rural migrants.

(4) The group of actors who benefit the most from this shifting geography of demolition waste consumption are property owners. Owners of to-be-demolished buildings can often charge demolition companies for the right to tear building down, as demolition companies can make a profit from the sale of salvaged building materials; villages located at the city's fringe lease out village lands to recycling companies to build recycling marketplaces, where recyclables (from not just demolition sites, but also residential neighborhoods and commercial establishments) are sorted according to their physical properties; rural villages that run debris dumps collect dumping fee from truckers and entrance fee from migrant scavengers. These diverse rent-seeking practices vividly illustrate the value of use building materials.

Based on these four major findings, I conclude that waste has remained treated as a resource in China from the socialist to reform eras. What has changed in the period of market reform, instead, is the geography of its consumption. The periphery has now become the center of waste consumption in China. This argument counters the mainstream understanding about China's waste problem. Contemporary writings about China's post-Mao transformation often render waste as an external cost of economic development. For many, waste exemplifies one of the negative consequences of China's ferocious economic growth: environmental destruction. Through the present study, I have shown that such a conceptualization of waste is flawed. It conceals not only the contributions of waste in the development of the country's rural economy but also the diverse forms of waste-related works and businesses.

How does this study speak to the current waste scholarship? The primary focuses of the current waste scholarship are the politics of waste (a concern shared by waste management literature and environmental justice literature) and the

politics of identity (a concern of discursive analysis of waste). There is an insufficient amount of discussion on the economy of waste. Literature on scavenging and recycling—one body of literature in the waste scholarship that examines the economy of waste—pays little attention to the networks, and thus falls short of offering an understanding of the spatial dimension of the waste economy. It has also shied away from explaining how the waste sector comes to being. In this study, I have proposed that the commodity chain approach offers a promising tool for the study of waste. It allows us to bring back both the economy and geography to the study of waste without sacrificing the sensitivity to the politics of waste. The commodity chain approach is also a useful tool to delineate the formation and the transformation of the waste sector. By placing two distinctive types of used building material chains—one belongs to the socialist period and the other to the post-socialist period—together, I was able to show that, in the 1980s, the demotion of used building materials in official discourse from a type of resources to “garbage” had made possible the formation of a network of businesses that is geographically distinctive from the one that had existed in the socialist period.

This study calls for more attention among economic geographers to the back-end of the value chain. Economic geographers’ long-lasting interest in the study of commodity chains seldom extends beyond the point of commodity consumption. The back-end of the value chain, or the waste stream, is often analyzed through the frameworks of environmental justice and waste management, which, as mentioned earlier, lack the analytical strength for studying the economy of waste. The present study finds that, first, the labor process of un-building—stripping a building down, collecting and sorting used building materials, and removing the materials from its original location to another location—opens up commodity potentials of demolition waste. Second, the value of used building materials opens up profit-making opportunities. In the reform period, the utilization of demolition waste by the periphery has encouraged demolition companies to engage in the collection of used building materials and given rise to the emergence of recycling companies, who make a profit from offering spaces for waste sorting. Third, because waste recovery is profitable, property owners are able to demand rents from businesses such as demolition companies and recycling companies. Activities that take place at the back-end of the value chain, thus, can be just as productive as the activities required to put things together into a product.

Urbanization is not just a political-economic process. It consumes resources and energy, and it produces waste; it is inevitably also a material process. Urban political ecology literature—an emerging body of scholarships in urban studies that tries to untangle the political economy of this material process—has not paid enough attention to the output side of urban metabolism. The present study was

carried out with an aim to fill this gap. Furthermore, urban political ecologists pay little attention to the role of the socially marginalized in social-ecological processes. Most of the active players identified by scholars are the privileged; the socially marginalized are typically painted as the victims of certain social-ecological transformation. Few scholars who give a voice to the socially marginalized groups do so by examining environmental justice movements; they thus regard the agency of the marginalized as a force that counters capitalist production of urban nature. In showing how villages and towns surrounding Beijing use demolition waste to open up opportunities for growth, this study has argued that the socially marginalized play an influential role in urban metabolism. Countering capitalist production of nature, however, does not define their agency. Villages and towns in peripheral Beijing consume waste in order to improve their position in the market, not to defy its logic.

Yasheng Huang, the scholar who coins the term “state-led urban China” to emphasize the declining importance of the countryside in China’s post-Mao economy, has overlooked the question of how the countryside reacts to the formation of urban-biased, state-controlled capitalism. This study has explored the urban-rural dynamics in reform China through the lens of urban metabolism. It shows that the rural China responds to urban domination by treating cities as a symbiotic host. Rural China appropriates materials regarded by cities as waste to open up opportunities for growth. For state-led urban China, this symbiotic relationship with the countryside has both positive and negative effects. On the one hand, the use of waste by the periphery greatly reduces the cost of waste management. On the other hand, however, by using waste as a resource, the countryside remains an important player in the market. Urban China’s project of subjugating the countryside has never been completed.

Heynen, Kaika and Swyngedouw, in *In the Nature of Cities*, proclaim that “urban political ecology is about formulating political projects that are radically democratic in terms of the organization of the processes through which the environment that we inhabit become produced” (2006: p. 2). To what extent, then, does this study help imagine a progressive waste activism? Villages and towns in the urban periphery are now the center of waste consumption in China. They use materials the city regards as waste to nurture industries and, in general, to create opportunities for growth. The labor of those who work on waste—scavengers, recyclers, demolition workers, truckers, etc.—thus, contributes to the Chinese post-Mao society in two ways. On the one hand, it allows the rural China to remain an important player in the market. As a result, the Chinese post-Mao economy is less state-centric than what Yasheng Huang has described. On the other hand, the waste labor removes unwanted materials from the city. It thus helps urban China open up new room for accumulation. The importance of waste

labor in contemporary China, however, has not been recognized in today's social activism. Environmental NGOs in China focus on developing waste reduction, reuse, and recycle programs at the urban grassroots level. They hope that these neighborhood programs can de-legitimize urban governments' claim for the need to build more landfills and incinerators. They could have questioned the negative impacts of these municipal waste facilities on the job security of those migrants who work on waste. Labor NGOs put their focus primary on the rights of workers in factories. They pay less attention to the workers working in industries outside the manufacturing sector. This study sketches the network of businesses and institutions that constitute the waste sector. It thus provides a starting point for us to imagine better environmental and labor activism.

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