7. Nonhuman Agency

7.1 Introduction

> Things are alive and active not because they are possessed of spirit – whether in or of matter – but because the substances which they comprise continue to be swept up in circulations of the surrounding media that alternately portend their dissolution or – characteristically with animate beings – ensure their regeneration. (Ingold 2007, 12)

A host of other micro-practices is subsumed within these broader practices, many of them occurring concurrently. Cutting, ripping, tearing, reducing, shredding, compressing, wrapping, moving, sorting, separating, and so on. And it is through some of these micro practices with materials, which together work to coproduce salvage and remediation, that asbestos is reanimated (Gregson, Watkins, and Calestani 2010, 1081).

Air can be what Ingold terms a "surrounding media" that can change the properties or states of many other materials. The *çıkmacıs'* activities themselves can also be seen as a surrounding medium that results in the emissions of asbestos. In the context of waste's materiality, the empirical part of the research shows that such corporeality and coexistence are manifested between *çıkmacıs* and certain discarded materials, namely PVC and asbestos. To exemplify this conceptual statement, I discuss three topics relating to the unrecognized agency of materials: environmental degradation, workplace safety, and dwelling construction. The empirical precedents are based on participant observations, conversations, and field notes.

In the literature review chapter, I argued that the abundance of PVC, in the form of waste material and second-hand window frames, can be viewed as either a passive resource or a nonhuman actant. The first view requires a focus on the many ways in which waste is retrieved by the formal sector, for

example, when it re-enters industrial production cycles (Gutberlet, 2017; Dias 2016). Such a perspective cannot be sidelined because economic factors play a significant role in creating the excess of reclaimed materials from industrial production and urbanization.

In the second view, derived from actor network theory, the materiality of waste is discussed as a viable actant (Bennett 2010; Hawkins 2010; Gregson and Crang 2010). Hawkins explores how a plastic water bottle's association with healthy lives, hydration, and clean water obscures the materiality of plastic waste (Hawkins 2009). The environmental problem of its mass accumulation in nature is put in the spotlight. Like plastic bottles, PVC window frames are overproduced during industrialization.

The functionality, affordability and mass production of PVC window frames result in their over-consumption. The production and recycling process of PVC creates hazardous emissions but the governing bodies often ignore them. Material reclamation of PVC frames is precarious due to poorly regulated demolitions. Interestingly, the motive for these demolitions is an earthquake, one of the most potent nonhuman actants, one that changes the built environment on an even more extensive scale.

The policymakers, city planners, and architects have to consider the earth's tectonics in urbanization and dwelling construction. Configuration of cosmopolitics in the presence of earthquakes represents the importance of recognizing the coexistence of human and inhuman worlds (Blok and Farias 2016). Not to mention that the destructive material agency of an earthquake is 'taken advantage of' in order to finance the construction industry, which is in turn powered by the real estate market in Turkey.

To discuss the agency of matter, I divided the chapter into two parts. The first part is focused on PVC and asbestos as active actants within building reclamation and demolition assemblage. In the second part, I concentrate on examples of dwellings made by incremental construction using reclaimed components. These dwellings were created in the rural parts of Turkey where building code regulations are not as strictly enforced.

7.2 Active Matter Before and After Reclamation

In the social sciences, 'materiality' is often defined in the following way: the concept that a cultural artifact's physical qualities influence how it is utilized. However, because materiality focuses more on consumption and the agency

of things, such an object-oriented perspective necessarily leaves out the production process. An actant, whether human or nonhuman, makes an impact, causes a result, or alters the trajectory of events (Latour 2004). The production and dematerializing processes like recycling can be defined by "the flux of materials and their transformations" (Ingold 2007, 9). During the recovery processes of buildings, a wide range of objects and substances become active: PVC frames, doors, glass, concrete, reinforcement bars, electrical cables, doorknobs, sanitary fittings, plumbing fixtures, marble, ceramic tiles, radiators, heating systems, boilers, elevators, kitchen cupboards, roof beams, rails, parquets, roof tiles, security bars, furniture, and asbestos.

7.2.1 The Excess of Second-Hand PVC Window Frames

An excessive amount of white PVC frames can be found in second-hand supply yards all over Turkey. Its roots go back to industrial construction technology and consumer culture advancements. PVC frames with double-glazing are promoted as affordable products that reduce noise and heat loss. Because of cold winters, building density, and traffic, such properties are highly desirable in middle-class households in Istanbul. PVC profiles that carry the double-glazing windows serve as the main body of the frame with the support of metal profiles inside. When such technology was first introduced to the construction market in the early 1980s, the old wooden single pane window frames were replaced with the PVC frames flat by flat.

The wooden window frames were discredited because of maintenance difficulties: they had to be regularly cleaned and sealed and they were not able to hold double-layered glass. Made by carpenters, wooden frame production needed a lot of expertise and craft to process wood profiles. However, the material cost and manufacturing of PVC frames were cheaper and faster, partly because of profile extrusion technology. With this technology, the frames' energy-saving properties were enhanced because the plastic profiles of the frames could be produced with air chambers inside. Technically, these profiles reduced energy loss.

An Istanbul PVC piping manufacturer, Pimapen, first introduced the technology in the 1980s. The PCV factories eventually replaced carpenters, who were expensive and slow because of their manual labor. At first, the frames were called Pimapen but later, other manufacturers in the market called them by different names. In the Turkish retail market, the product is still called

Pimapen but not as its technical name. In 1980, one of the TV advertisements for the double-glazing glass advised:

> (While the banknotes were flying in front of a window on the TV footage) If you are not rich enough to throw your money out of the windows, listen carefully! In a building, most of the heat is lost from the window openings. If you installed the new technology, 20 percent of the heating cost would be in your pocket. When buying a flat, ask for double glazing. Burn less, warm up more. (ISICAM 1980)

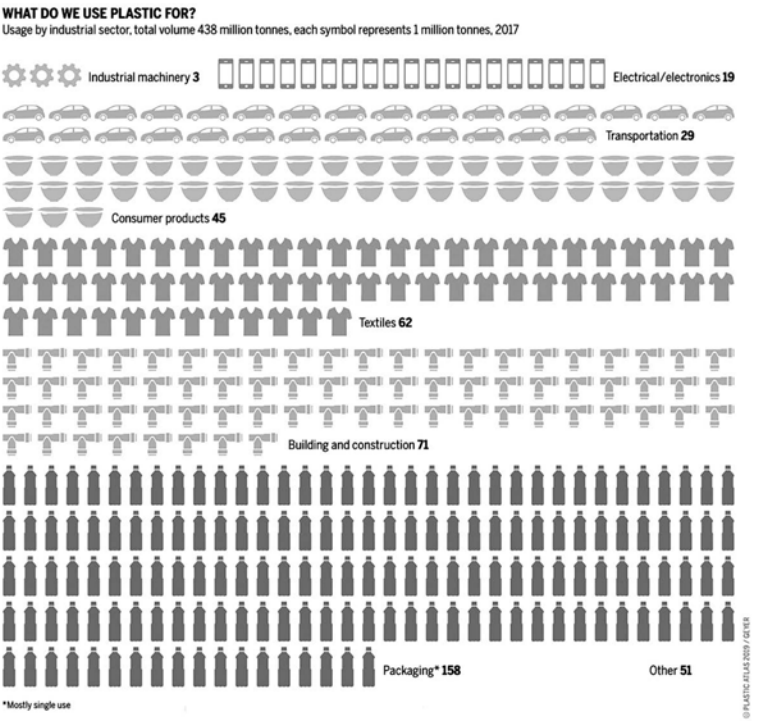
In another advertisement from the early 2000s, the main character was a doctor, played by a famous comedian with expertise in 'windowology' (Pimapen 2000). He was shown curing a sick household by prescribing the right type of plastic frame. In addition to the effective promotion strategy within those advertisements, every neighborhood in Istanbul had a PVC frame franchise that exhibited new products.

PVC frames were regarded as a necessary household appliance that was installed or purchased to improve the heating condition of old flats, which needed remodeling and upgrading. However, PVC's animate properties are often ignored. Those properties arise from the recycling process that changes its substance structure and associations with its surroundings. The environmental impacts of PVC in the petrochemical and recycling industry remain invisible to the governing bodies and the public in Turkey. In the following, I reveal the hazardous properties of PVC.

7.2.2 PVC as a Raw Material

The discovery that PVC could be manufactured from a waste product of the petrochemicals industry was the catalyst for its widespread use. According to Heinrich Böll Foundation's report "Plastic Atlas", the industry created a monster: "Although it was increasingly known that PVC production harmed both the environment and human health, the petrochemicals industry took advantage of the new possibilities to turn a waste product into profit" (Fuhr and Franklin 2019, 10). According to the same report, 71 million tons of plastic (16.2 percent of overall production) were used in the construction sector in 2017 (Hazardous materials within CDW have an underestimated impact on the built environment and urban life. 1), and 10 percent of 407 million tons of worldwide plastic production in 2015 consisted of PVC (ibid).

Figure 7.1: The distribution of plastic production per sector in 2017



Source: (Fuhr and Franklin 2019)

Plastics are often blended with toxic chemical additives such as plasticizers, fire retardants, and colors to enhance their qualities. Many of these additions improve the material's flexibility or durability. Although it may be true that all plastics can be recycled, it should be kept in mind that PVC's production causes CO_2 emissions and its melting releases highly toxic dioxins. Plastic recycling workers' lives are hazardous and heavily exploited within the context of global capitalism (Hulme 2015).

Throughout its production history, plastics have damaged the environment and human health (Thornton 2002). When being recycled, the process results in the substance being released into the water or air, and it eventually ends up

in the human body. According to the seven plastic recycling codes[1], PVC is rated as 3, which means it is difficult and dangerous to recycle.

In 2017, 71 million tons of plastic were used worldwide in the building and construction sector (Fuhr and Franklin 2019). Referring to this amount of production, its indestructible mass impact on environmental degradation is undeniable. Due to its durability, solidity, and lightweight properties, PVC is widely used in building technologies; however, the average lifespan of a PVC window frame is between 20 and 30 years. In recycling processes, PVC's thermoplastic nature supposedly allows the material to be heated and molded or extruded many times without losing its technical properties. However, according to the report titled "Window of Opportunity" in 2003 by the World Wildlife Fund (WWF), PVC frames have many negative impacts on the environment:

> PVC is a product that uses a non-renewable resource. It cannot be sustainable: oil makes up 43 percent of the raw material required to make PVC; PVC windows generate 43 percent more waste than timber windows: 82 percent of total PVC waste goes to landfills; 15 percent is incinerated. Only 3 percent is recycled; PVC waste will rise to 6.4 million tons by 2020 when the capacity to recycle it will be a fifth of what will be required; it takes eight times more energy to manufacture a PVC window than an equivalent timber frame; throughout the use and disposal of the product, the overall environmental burden is significantly less for timber windows than for PVC windows hazardous chemicals are released into the environment during the incineration process of PVC. (C. Thompson 2005, 10)

These environmental burdens of PVC window frames are often disregarded in the Turkish context where the affordability and functionality of the product are more important considerations than its toxicity. Unfortunately, no report on the amount of PVC frame waste in Turkey exists. On the other hand, they are the most recycled and reclaimed building elements in the yards. *Çıkmacıs* greatly contribute to extending PVC's lifespan. Due to their relational impacts, PVC frames have a considerable weight on the agency of materials. Such arguments based on this kind of agency can introduce new ways of engagement with PVC beyond its economic value.

1 Resin Identification Code (RIC) is developed by the American Society for Testing and Materials (ASTM).

7.2.3 Recovering PVC

Çıkmacıs sell oversized windows to recycling companies. They remove the double-glazed glass and break the frames on the demolition sites. Custom-produced large frames cannot be sold second-hand because they are hard to transport and store, and the dimensions are generally unfit for reuse. Instead, the broken profiles containing metal and plastic profiles are sold to the recycling factory based on weight price per kilogram. At recycling factories, the frames are granulated into PVC powder recyclates. This mechanical recycling has four stages: first, the frames are shredded into smaller parts; second, the metal is broken apart from the plastic; third, PVC and rubber are separated; and lastly, the PVC is re-granulated. Unlike European mechanical recycling, the double-glazing glass on the frames is not recycled since it is broken on the demolition site and is mixed with the demolition debris. As a final product of mechanical recycling, the metal and PVC powder are sent to manufacturers. The PVC powder is processed to produce new construction pipes, window profiles, and injection molding products.

The frames with smaller sizes are kept intact to be sold second-hand. Some of them are repaired or reframed with low-level production technology. This kind of production takes place in the supply yards equipped with makeshift plastic framing devices. Based on my observations in Fahri's workshop, a skilled-worker cuts the plastic profiles and inserts recovered metal reinforcement profiles that give rigidity to the plastic frames. For attaching the profiles, he uses a makeshift PVC welding machine and acrylic glue. Sometimes he even processes recovered double-glazed glass without properly sealing air between the two layers. The end product is far from the quality of the newly produced frame; nevertheless, the price is affordable for low-budget customers. Consequently, the second-hand frames are distributed out of Istanbul through trade routes. As a result, the plastic continues its life span in other buildings, and the excess material waste is reassessed as a second-hand product. The prolonged life span of the object has positive impacts on sustainability and environmental change.

7.2.4 Asbestos Exposure

Between 2000 and 2010, 130 thousand tons of asbestos was exported to Turkey from abroad (mainly from Greece and Russia) (Odman 2019). It was used extensively in the construction sector until its ban in 2010 due to its

carcinogenic dangers (Union of Turkish Engineers and Architects Chambers (TMMOB) 2017). Building components that contain asbestos are corrugated cement roof plates named after the brand name Eternit[2], wall claddings, vinyl-based flooring, ceiling boards, heat isolation, fire-resistant boards, radiators, boilers, and drain pipes. Its properties in its solid state are very significant: strength, durability, and the ability to withstand high temperatures. However, when its fibers are released into the air by a decomposition process, its hazardous properties are activated. It has to be handled cautiously. Such transformational features of materials enable them to perform. Gregson and Crang (2010) claim that asbestos exerts its effect by establishing connections with human and nonhuman counterparts. For instance, they discuss the nonhuman agency of asbestos and its material metamorphosis in shipbreaking (Gregson et al. 2010). That is why materials like asbestos must be considered in their transformative states rather than just in their stable ones.

Depending on the date of the construction, building materials containing asbestos were heavily used in some buildings in Kadıköy from the 1950s to the 1990s (Odman 2019). In her study, Odman creates a risk map of Kadıköy (Figure 7.2) based on production statistics, construction dates, and current demolition sites. This map overlaps with the sites and depots I visited in Kadıköy, and it especially overlaps with Fikirtepe, where large-scale demolitions occurred. The demolition sites were places where asbestos fibers were potentially mixing into the air and affecting the health of the workers and neighboring residents. The map also shows public areas (marked in red) that are located close to Asbestos exposure risk. The authorities ignore the dangers revealed by this map.

It is important to conceive of asbestos as an active substance. As Gregson and others remarked:

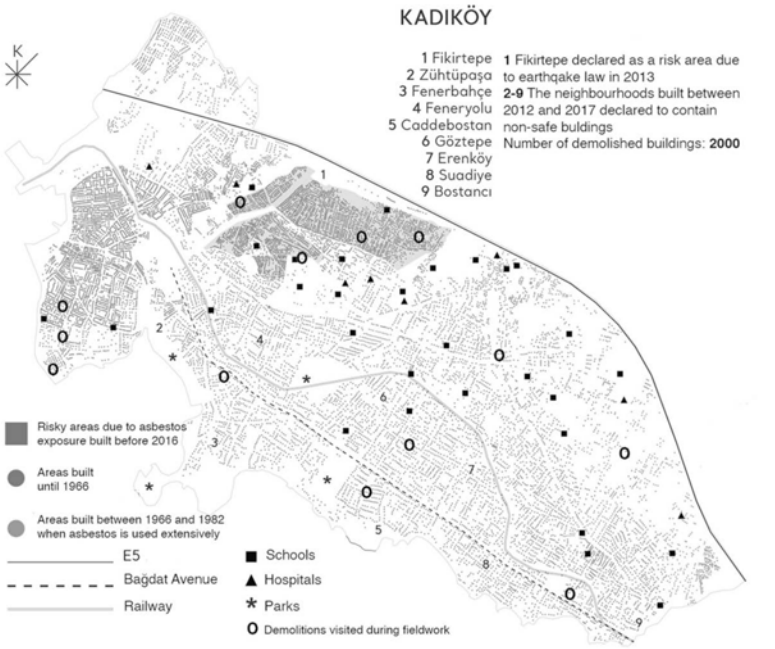
> This means that material can no longer be consigned to the category of 'dead' matter, positioned as stuff that is, at best, there to be manipulated and, at worst, the irrelevant baggage of unreconstructed materialism. Neither does this mean thinking in terms of categories such as 'hazardous' that work both to separate off human and physical worlds and to prop up constructivist readings of material. Rather, we want to think of asbestos as ma-

2 Founded in 1905, Etex company, also known as Eternit, started producing asbestos fiber cement products in Belgium. These products contained 90% cement and 10% asbestos. In 2021, the founders of Etex were sentenced to 16 years for the death of 3000 Italian workers employed by a factory in Turin (Boggio 2013).

> terial handled in practice and practices. (Gregson, Watkins, and Calestani 2010, 1067)

Working in old apartment blocks in Kadıköy, *çıkmacıs* often end up working with some components made of asbestos. The workers were not thoroughly informed about asbestos' effects on human health and did not use any protective outfits or masks. When I asked them if the building was checked for asbestos, they did not have any information. In the Turkish demolition regulations, it is stated that asbestos abatement should be done. In any case, the authorities did not inspect the buildings during my field visits.

Figure 7.2: Risk map due to asbestos exposure from demolitions in Kadıköy- Istanbul



Source: Author's own based on the asbestos risk map (Odman 2019)

Since the reclamation took place in several parts of the building simultaneously, the workers operating in different parts were under an invisible exposure. For instance, a worker cutting metal parts of the heating system could be a reason for release of Asbestos fibers attached to the heat insulation layer. When suspended in the air, the workers might inhale the matter and damage their lungs. Since exposure may cause cancer after a decade, the effects of asbestos on workers' health remain largely unknown and invisible.

Based on the statement of Engin in Chapter 5, the demolition sites are not inspected regularly, and the workers do not wear work clothes. Taking risks on their own, they do not use masks or other protection against dust and asbestos emissions while dismantling roof structures, heating systems, and heat insulation material. For them, as long as asbestos is not seen, it is not considered to be harmful to their health. However, they are not aware of the long-term effects of substance exposure.

7.2.5 The Agency of Toxic Materials

It is critical to highlight that recycling is aligned with capitalism in that it seeks to increase industrial productivity (Thorton et al., 2002). During the production and recycling processes of PVC frames, some of its hazardous compounds are released by incineration. The effects of these compounds on the environment are often overlooked by the petrochemical and recycling industries. Stepping back for a moment, we can think about trans-corporeality and how it considers all embodied beings as connected to the material world through their reciprocal relationships and transformative interactions (Alaimo 2010). Thus, relationships between demolition workers and these toxic materials can be seen as resulting in trans-corporal associations which these industries do not see.

Çıkmacıs act as unacknowledged people that dismantle, collect, and transport the reclaimed materials. During these activities, they make contact with other materials whose existence remains independent from human control. During demolitions for salvaging components like PVC frames, there is a high possibility of asbestos exposure in old pre-ban buildings. The recycling emulsions of plastics and the interaction of human bodies that deal with the toxic environment could explain that waste is not exterior to humans but a trans-corporal agent with much power to change the course of processes.

The materiality of waste has a positive connotation, but seeing it from the perspective of a circular economy via recycling, reveals the implicit harm of the material to the human and nonhuman world. To some extent, the sustain-

able development and recycling industry remains a wasteful and dangerous surplus of the capitalist construction industry. In the following, I will discuss the power of reclaimed components and their second lives that are utilized to create dwellings.

7.3 The Utilization of Reclaimed Materials in Buildings

In the context chapter (Ch. 4), I demonstrated that unsorted demolition waste was a crucial resource for low-cost constructions and informal urbanization. Earlier versions of these *gecekondu*s resembled one-roomed village houses roofed with clay tiles. At that time, they had stone walls but the ones built later were made of prefabricated components like corrugated sheets, salvaged concrete panels, and found window frames (Pérouse 2014). Rooms were added step by step to extend the makeshift squatter houses:

> Incrementalism, as a labor intensive and historical accretion, is an important form of dwelling as assembly and is common to a whole range of urban processes and forms, from housing and policy to infrastructure and culture. (McFarlane 2011, 659)

Slow-paced construction of gecekondus is banned and criminalized by the state in Turkey. Even now, building salvaging as a gathering process links the cooperation between reclaimed materials and urban incrementalism. The secondary life of building refuse continues to exist through material recovery and trade activities through second-hand valuation. My research reveals how second-hand building components are still utilized in different dwelling constructions in rural parts of Turkey and Tbilisi in Georgia. Even though Tbilisi is different in terms of its urban and urbanization context, it shares a common ground with the rural parts of Turkey, namely, it's a housing problem. *Gecekondus* in Turkey and dwellings in the Gldani microdistrict of Tbilisi were developed incrementally. In Gldani, the *gecekondu*-like dwelling expansions are vertically attached to old Soviet residential blocks.

Generally, second-hand materials are used for an upgrade or repair. The components are used in summer dwellings, village houses, hobby garden huts, seasonal farming shelters, and vineyard cabins that host recreational and farming activities. The openings are modified according to the size of the second-hand frames manufactured for a former building in Istanbul.

The precedent dwellings are not categorized as illegal like *gecekondus*, but I see them as being in a gray zone where state control mechanisms do not apply regulations strictly. Apart from the urbanization context, the arrangement of reclaimed components in incremental examples represents unique socio-material alignments because of things' different relational and processual properties. Referring to Bennett (2010) on the importance of thing-power over specific waste assemblages, McFarlane discusses that such groupings depend on gathering processes in the formation of the incrementally constructed dwellings (McFarlane 2011b). The importance of second-hand components stands out for their necessity in construction, excessive accumulation, and frugality in the rural context. I see the thing-power in how reclaimed components get involved in the design process and become part of the new buildings through incremental constructions.

The agency of PVC frames is fundamental: they are affordable, available in high quantities, and traded outside of Istanbul. During my field research, I observed that the sizes of second-hand frames determine the design of the building openings. During construction, the builders have to adjust the space dimensions and openings according to the available dimensions of the second-hand components. The owner has to frequently coordinate the builders for these adjustments since the search for second-hand components is always going on. Further, the incremental construction follows an intermittent process in which resources are sometimes scarce. Occasionally, the construction stops and waits for components to be found. Such capacity and trajectory of things to animate people for the construction processes and the design of the buildings are further discussed in the next section that is based on empirical findings.

7.3.1 Construction in the High Plateau: Susuz – Kastamonu

Fahri, a 35-year-old man, bought reclaimed materials from a building on his street in Bulgurlu, a former *gecekondu* neighborhood in Üsküdar. On the lot where he bought the materials, in the 1970s, a squatter house used to stand. After zoning amnesty in the 1990s, the gecekondus were modified into three-story apartments. As a result of the urban transformation act in 2012, the zoning regulations were upgraded to five floors in the district. In 2016, the owners demolished this apartment to build a new one. During the demolition process, Fahri closely followed the construction to get cheap used construction com-

ponents and made a deal with the scrap dealer reclaiming components. Fahri remarked:

> I had a limited budget to rebuild the village house. I had to wait for a good opportunity. Otherwise, it would be even too expensive to buy from a *çıkmacı* yard. Instead, I made a deal with the scrap collectors before selling the components to a second-hand wholesaler. Buying from a yard would be more expensive because they would make profit over the incoming price.

Eventually, he bought kitchen cupboards, a kitchen counter with a sink, four interior doors, six PVC window frames (100x150 cm), two small toilet PVC window frames (40x40 cm), and one PVC balcony door. If he purchased them new, he would have paid 5 to 8 times more, he admitted. He was still looking for a metal door for the entrance and vinyl parquet flooring. Due to his limited financial resources, he was only able to make a few small remodeling repairs to his flat in Istanbul. But here, in his family village in Kastamonu, he was able to entirely rebuild his family house.

Fahri used these materials in his new family house in Susuz, located in the Western Black Sea Mountains. According to Fahri, there were 140 houses in the village. It is not inhabited during the winter. Like many village houses in the Black Sea, the old house, partly burnt, was made out of wood. After a landslide, it was considered uninhabitable. It was no longer legal to build new houses on new land in the village. However, if a house was severely damaged, like Fahri's family's house, they were allowed to repair or build a new one in the same spot. Unlike the old one, the new house has a concrete structure. It stands on concrete beams. However, as he pointed out:

> It is not allowed to be built with concrete anymore in the region. According to new regulations, all the houses should have traditionally built wood structures. Still, you can use PVC frames on the windows.

Like other houses in the village, the house had two stories with 100 square meters of floor space each. After they completed building the first story, his parents started to live there. He was in the middle of completing the ground floor when we met. The plan consisted of three rooms, a kitchen, and a bathroom. There was one less room on the first floor, but the rest of the plan was the same. The dwelling was planned to accommodate two families.

After finishing the load-bearing concrete structure, he sent the dimensions of the windows and door frames to the construction workers so they could make the façade and door openings (Figure 7.3 and 7.4). He said they were lucky that the construction was still going on when he found the components; otherwise, he probably would have had to knock down some walls. In this way, he could fit the frames to the openings. The size of the kitchen is arranged according to the size of the cupboards (Figure 7.5). They completed the roof with old wooden beams salvaged from the former house. The roof was then covered with insulated metal panels. Apart from the concrete structure and clay bricks, most parts of the house came from reclaimed materials. In the following section, I will discuss a different rural dwelling in a different village because the availability of second-hand materials determined the construction development. The frugality of the owners offers an excellent example of the ethical meaning of 'buying second-hand'.

Figure 7.3: West façade of the dwelling with a metal door salvaged from Istanbul

Source: Erdinç Eşref Uslu Archive

Figure 7.4: Second-hand façade elements

Source: Erdinç Eşref Uslu Archive

Figure 7.5: Second-hand kitchen cupboards

Source: Erdinç Eşref Uslu Archive

7.3.2 The Village of Çıkmacıs: Yazıhüyük – Nevşehir

Yazıhüzük village is located in central Anatolia within the city limits of Nevşehir. There are 700 houses in the village, all built around the farming lands (Yazıhüyük Municipality 2021). Additionally, sheds, storage units, and barns are also positioned around the land. construction of buildings up to two stories is allowed in the village. According to the law designated for places with less than 10 thousand population, permission from the local municipality is necessary to make a new addition to a house (Turkish Parliment (TBMM) 1985). In the first stage, the villagers build the ground floor. After several years, due to matrimonial extensions of the family, a second floor will be built.

During my field visit, Engin, the scrap collector who I met in Istanbul (see Ch. 5.3.2), showed me his relative Mehmet's farmhouse (Figure 7.6). Engin said that the traditional construction method used to be stone masonry. However, currently, the villagers built the houses with reinforced concrete structures because it was cheaper and more practical. A local craftsman helped Mehmet with the construction. The new building provided additional space for Mehmet's extended family, which consisted of four brothers, their wives, and their parents. After marriages in the family, they made additions to the existing building. Additionally, a one-story house was built on the farmland. The construction was achieved by incremental process depending on the availability of second-hand materials and financial resources.

The two houses were positioned at the edges of the privately-owned agricultural land. The construction phases were at different stages. The ground floor was occupied in the older one, and a floor was added above the existing roof. The construction of the first floor was still in progress. The new house next to the old one was not occupied yet, and only the rough construction of the ground floor was finished. Even though the people were from the same family, the constructions were financed and managed separately.

The newly built first floor had seven rooms, and the floor plan was 70 meter-square. The ground floor was 45 meter-square. It was planned to be larger than the ground floor to create an open garage space that could also be used for storage. Plus, balconies were added to the second floor. A new exterior staircase was installed to provide vertical access between the two levels. For the façade of the first floor, second-hand window frames were used. The frames used to belong to an apartment in Istanbul. Engin explained that he sold the frames before Mehmet started to put up the exterior walls. Therefore, he could determine the dimensions of the façade openings (Figure 7.7). Engin responded:

"They have to wait for me to deliver the components for a few weeks. I looked for high-quality second-hand [materials]. I brought the window frames with me when I was coming for the harvest". Engin also sold Mehmet kitchen cupboards and heating radiators from a flat in Kadıköy. The radiator was not installed yet because the main structure was only finished recently.

Figure 7.6: Two houses and agricultural land in Yazıhüyük

Source: Author's Own

The building façade shows different histories. The ground floor was constructed 40 years ago and it had smaller window frames and was built with load-bearing stone walls. Mehmet said the ground floor went through a renovation ten years ago. They replaced the old wood frames with PVC frames and added an extension to the entrance made of plastic profiles. The adjacent house with a single floor was also constructed by the same incremental logic.

In the adjacent house, the first stage of the construction, the ground floor, was recently completed. A staircase was constructed for climbing on the flat roof, which would be the first floor for the next generation of the family. However, the owner explained that it would not be completed for at least another five years. Unlike the other house, the façade elements were ordered from a manufacturer because they wanted new windows. After all, the contractor had already built it. They did not want to deal with enlarging the openings in order to install a used window frame. Mehmet explained that when he purchased the

kitchen cupboards from Engin, they adjusted the size of the kitchen to accommodate them. They were specifically looking for a second-hand entrance door which they had not yet found. Such situations delayed the construction.

Figure 7.7: PVC window frames from Istanbul in Yazıhüyük

Source: Author's Own

When I asked about the building permissions, Mehmet explained that they did not apply for permission yet. Nonetheless, it was unclear if they would ask for one. These two houses are good examples of the different stages of incremental construction in the village. The incremental way of construction is a slow process dependent on second-hand components, uncontrolled building permissions, and personal relationships with public authorities.

Some of the construction projects in Yazıhüyük are built under the radar of state zoning laws. These projects take place within a network of informal personal relationships with small local governments. Social relations are more valid than bureaucratic mechanisms. Not only is the law loosely applied and controlled in small villages, but also people rely on the construction amnesties and low fines issued by the state. It is crucial to highlight that the amnesty legislation is used as political publicity before local and general elections. Such factors explain the circumstances enabling incremental construction processes determined by the agency of things in terms of the construction period and dwelling design. In the next section, I will examine how incremental

construction of a migrant neighborhood is achieved under the provision of the state and how second-hand materials influence the typology of architecture.

7.3.3 Eskişehir Bağları – Kayseri

The district of Eskişehir Bağları is part of Kayseri province in Central Anatolia. The Eskişehir Bağları district was planned as a *Gecekondu* Prevention Zone at the periphery of the city when informal housing was perceived as a problem that conflicted with urban modernization processes. Utilizing these projects, the government tried to solve the housing problem by expropriating state land and supplying affordable home loan credit to low-income individuals. Legislated in 1966, Law No. 775 aimed to prevent new squatter houses, supply shelters for migrants whose homes were demolished because of illegal means, provide new dwellings for rural migrants, and improve urban living conditions in slum areas in migration-receiving cities (Turkish Parliment (TBMM) 1966). According to this legislation, the local governments were made responsible for making zoning plans, managing the developments, and providing the infrastructure.

In 1994, the metropolitan municipality of Kayseri began to expropriate the state-owned land in the district to supply housing for rural migrants and stop them from building *gecekondus* without any infrastructure and planning. The municipality planned 7200 parcels on 3 million square meters of land, and 6000 were reserved as 210 to 250 meter-square plots (Karayel 2019). The municipality leased the plots with long-term affordable installments to the rural migrants. Therefore, the population of the district reached nearly 150 thousand.

At first, Kayseri houses could not be built higher than one story; right before the 1998 local elections, the height limit became two stories; later, prior to the 2002 elections, the height limit was raised first to three stories and then to four (ibid) (Figure 7.8). Within these changing zoning decisions, the residents were responsible for financing and constructing the houses. According to the second-hand supplier, Özcan, the construction took place incrementally; first, the dwellers built the main concrete structure of the ground floor, leaving reinforcement bar sprouts over the roof; later, they put up the walls on the ground floor and started living there, then they completed the other floors. Occasionally, they could not finish the exterior wall plaster because of a lack of financial resources. Currently, the district remains unfinished, and dwellers

are trying to lower the construction costs by using inexpensive materials and components.

Figure 7.8: Eskişehir Bağları district in Kayseri

Source: Author's Own

Özcan observed that the district's population increased while refugees from Afghanistan and Syria replaced old dwellers. Old rural migrants who became the owners of the single-family houses moved to better flats close to the city center. The dwellings were modified into small apartments accommodating large refugee families. Even the basements used for storage were transformed into flats. Özcan clarified that, during remodeling constructions, second-hand materials were preferred because the owners did not want to spend their financial resources on constructing the dwellings. Additionally, they wanted to make as much rental profit as possible from the increased real estate demand due to the influx of refugees. Unfortunately, the refugees with low incomes had to live on what they could find. Most of the time, it was hard for them to find a place because of ethnic discrimination in the area (Kuru and Karanfil 2021).

With the demolition of neighborhoods, excessive quantities of construction waste were produced locally. The demolishers reclaimed the materials from traditional stone houses and concrete apartment blocks built in the 1980s. From traditional houses, the demolishers primarily recovered wooden

roof beams, roof tiles, and clay bricks. Moreover, they salvaged PVC frames, interior and exterior doors, and flooring elements from the old apartment blocks.

In different parts of rural Kayseri province, locally reclaimed materials were adopted to construct vineyard sheds and farming shelters (Figure 7.9). Özcan explained that wood reclaimed from the roofs of old houses was used chiefly in the vineyards. In the other places visited in the area, I observed that such materials were used for the small-scale construction of sheds and small shelters. The legal status of such small constructions remains ambiguous.

> The kinetic city is temporary in nature, dependent upon ephemeral conditions, and often built with recycled materials: plastic sheets, scrap metal, canvas, and waste wood. These materials also enable modification and reinvention. (Mehrotra, Vera, and Mayoral 2017, 18)

Figure 7.9: Makeshift vineyard shed in Ürgüp

Source: Author's own

Rahul Mehrotra attributes 'kinetic' properties to informal urbanization trends distinguished by flux, unpredictability, and indistinctness. Reminiscent of those kinetic qualities, the reclaimed materials in Kayseri have enabled a modifiable, reinventive, and responsive built environment; an environment that leans against the critical conditions and housing problems of the local government's zoning plans. The 'kinetic' aspects of adaptive reclaimed ma-

terials and the incremental contribution of the people there can function to accommodate critical livelihood conditions. Second-hand components are smartly translated into functional spaces by innovative reuse, self-organized labor, and trade networks. In the following, I discuss the urbanization of Gldani in Tbilisi, where those attributes of buildings are created with second-hand materials.

7.3.4 Micro-district: Gldani - Tbilisi

As a result of the second-hand trade between Georgia and Turkey, intriguing examples of incremental construction practices with second-hand components from Turkey were found in the Gldani district in Tbilisi, Georgia. Gldani is a micro-district, or micro rayon, located in the northern periphery of Tbilisi. Originating in the Soviet Union, the micro districts are mass housing settlements that cultivated the socialist ideal of rapid urban growth that attempted to solve housing shortages within the borders of the Soviet Union. Gldani micro-district is based on a master plan conceived by the Soviet regime between 1968 and 1972 and then finished in the 1980s (Secchi and Spita 2018). The project-based dimensions, acknowledged by Soviet standards, had the target of providing housing for 147 thousand residents (Elettra and Gurgenidze 2018).

After the dissolution of the Soviet Union in 1991, the district went through a significant change in their housing environment. State-owned apartments were reclaimed by dwellers who turned them into informally privatized dwellings. Such rapid and unrestrained built environment transformation could not be regulated because of limited urban planning and infrastructural resources. The residents were freed from standardized living conditions by the transformed environment that allowed them to modify the former Soviet apartments according to their needs (Assche and Salukvadze 2013).

During the last 20 years leading up to Georgia's independence in 1991, the former Soviet republic experienced severe political, fiscal, and social crises (Bouzarovski, Salukvadze, and Gentile 2011). Due to the already collapsing building industry, housing shortage, and densely overcrowded households, legislation was enacted in 1989 that allowed "balconies, recessed balconies, and verandas" to be attached to individual housing units (Gegidze, Manjavidze, and Opel 2016).

The residents took advantage of the gray zone that opened up after the law was passed to expand their homes. Their spatial alterations involved two ar-

chitectural interventions: enlarging private spaces to make them communal areas and adding extensions to flats (Figure 7.10). Public spaces were captured and informally privatized for individual gardens, commercial shops, and parking spaces. External 'parasitic architecture' attachments, known as 'Kamikaze Loggias', began springing up all over Tbilisi during the years of political chaos between 1991 and 1995 (Elettra and Gurgenidze 2018; Wainwright 2018).

Figure 7.10: Building extensions: kamikaze loggias and rooftops add-ons in Gldani

Source: Author's own, 2018

These loggias in the form of outdoor platforms connected to existing floors can extend the plan of flats up to 40 square meters (Secchi and Spita 2018). They are built over steel-bar-frame structures installed next to the buildings and weakly connected to their reinforced concrete block walls. The lower floors are sometimes equipped with a private staircase. Alternatively, the extensions function as terraces or are closed by the owners to obtain one or two more rooms. The owners use their own aesthetic criteria to decide the window sizes and other architectural details of each loggia without any worry about zoning restrictions or other limitations. This all results in a fairly impressive display: a complete freedom of architectural style, material, and color. Consequently, an architecture has emerged in Tbilisi that is unique among post-Soviet cities.

With limited financial resources and no state support, the residents recreate their homes in whatever way they want to.

Figure 7.11: Unfinished facade in Gldani

Source: Author's own

For the last 18 years, the alteration of the original architectural plans in Gldani can mainly be detected in the altered façades of the housing blocks. The façades consist of different sizes of modified openings with old and new window frames. They were constructed with various kinds of bricks and plaster. The façade itself reflects the construction history by its combination of original Soviet elements and new second-hand additions.

Although loggia construction is no longer legal in Gldani, informal practices continue there. In order to affordably make so many building alterations, one needs cheap construction materials and components. The second-hand traders of Tbilisi have been providing materials to Gldani for years. Giga, who is a *çıkmacı* with a yard on the city's outskirts, informed me that he still had a few customers who were renewing the facades of their Kamikaze Loggias in Gldani. He said they were buying PVC frames, metal apartment doors, and radiators.

During my visit to Giga's yard, one of the customers explained that he built the walls of a building extension ten years ago but has never had enough money

to finish it until now. He was looking for window frames and doors to enclose the extension. When I visited his extension, I observed that the walls were built with lightweight concrete bricks. They were uncovered and had cement mortar patches. The openings for the window frame were intentionally left blank for future repairs and the wall was unfinished (Figure 7.11). The steel columns were visible. It was like a large balcony. The customer was using the extension as a utility space, indoor patio, and a place to store fruits and vegetables. One part of it was built as a sitting area but it was winter when I saw it so it looked more like a shed or depot. He explained that the space in its current form was suitable for warm summers but that they had to cover it in plastic wrap for the winter. He said the construction felt never-ending because collecting inexpensive second-hand materials took a lot of time.

7.3.5 Architectural Reuse

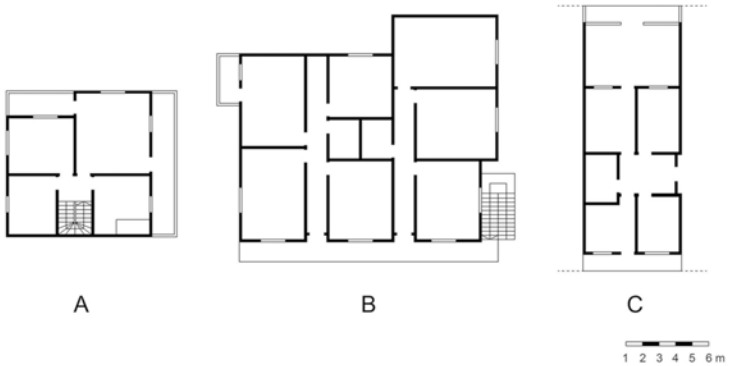
> Houses and limited infrastructure are added onto bit by bit; the mobilization of family labor buys time for a small business to grow; migration is used as an instrument to pool together savings in order to start a new economic activity; mobile work crews are formed to dig wells, help with construction, or deliver goods until they make enough contacts to specialize on one particular activity. (Simone 2008)

Non-metropolitan places are changing in such gradual ways in Turkey, while big cities are under the bombardment of privatization and financialization that does not allow such processes. Outside main cities, the agency of salvaged materials remains a critical factor in dwelling construction to this day. The footprint of salvaged materials is visible within the gathering of the components, second-hand trading activities, and its architectural integration into the design of the dwellings. The time required for construction depends on the owner's financial resources, access to second-hand parts, and ability to find inexpensive new materials. The volumes and façades of the resulting buildings are determined by the size and shape of the second-hand materials (Figure 7.12).

I also described how second-hand components are utilized during incremental construction processes in Turkey and Georgia. Such cooperation between urbanization, construction methods and reclaimed components is produced by the agency of the materials, gathering processes, uncontrolled zoning, building obsolescence in the urban areas, and material flows organized by

çıkmacıs. To the same extent, the agentic role of the reclaimed components has an effect on the rural construction processes in the assemblage of the building.

Figure 7.12: Plan A-Susuz, Plan B-Yazıhüyük, Plan C-Tbilisi



Source: Author's own

7.4 Remarks

Ingold suggests that all materials are processual and relational things that exceed a conceptual materiality that only focuses on consumerism and the functionality of artifacts (Ingold 2007). From this perspective, based on empirical findings, the agency of discarded materials was discussed in terms of three different subjects in the chapter: pollution, labor health, and dwelling construction. PVC window frame manufacture and disposal results in a discharge of toxic chemicals that endanger the environment and human health.

Asbestos is another dangerous and invisible agent that becomes active during demolitions. *Çıkmacıs* are not aware of its risk. It remains invisible because, even though there are asbestos handling regulations, the government generally ignores it. Balayannis (2020) argues that the stipulations for how to remove toxic waste are not necessarily what is actually carried out in the field. If legislative and administrative apparatuses recognized the agency of toxic waste, the effects of these materials on living things and the environment could be abated through new control mechanisms. The theoretical framework of 'new materi-

alism' problematizes the materiality of waste pointing out the animative power of substances and their associated assemblages (Bennett 2010; Hawkins 2010). This framework can help us address the ethical dimension of waste in everyday life.

The afterlife of PVC frames creates linkages between different kinds of incremental construction projects such as a village dwelling, farmhouse, state-supported neighborhood building, or a post-Soviet era apartment. The findings show that the legislative framework is loose in these areas. As discussed in the context chapter, these associations could be seen as the result of urbanization processes in Istanbul that determine the ways buildings become trash. The non-human trash acquires a new and unique value through cycles of reuse initiated by human labor.

The agency of second-hand building materials determine their installation know-how, building facades designs, and the overall incremental construction processes. When suitable components are found, the construction project is said to be 'in progress' and when they are missing, it is said to be 'put on hold'. Such timelines set the tempo of Incremental construction.

Reclaimable building materials are not simply a resource for the recycling industry and should not simply be called 'waste'. Their agency is more complex: they open up avenues of exchange and spread into different geographies through informal waste labor, reuse practices and second-hand trade networks. They influence the ways informal architectures are incrementally constructed.