Gender and Household Waste in Contemporary Japan: A Case Study of Tsukuba City

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ABSTRACT

Managing household waste is perhaps the most externally visible form of housework. In Japan, garbage disposal is a public and highly visible activity because in most municipalities garbage is collected from a communal pickup site and must be disposed of in transparent bags. In some locations, residents are requested or required to write their family names on the bags, making garbage disposal even less anonymous. It is often pointed out that garbage disposal in Japan is a public activity that can lead to social sanction. On the other hand, by properly sorting their garbage, residents – particularly housewives – can communicate that they understand and respect the rules of their community. In this way, household waste disposal becomes emblematic of a particularly gendered form of community belonging.

The purpose of this paper is first to explain how municipal solid waste management functions in one Japanese city, with a focus on the ways municipal and national waste regulations and infrastructure intersect with and influence residents' daily lives; and second, to identify and explore key themes that arise from this background, in particular the way that waste and waste work interacts with gendered social identities and the role of waste/work in local community building.

KEYWORDS

Gender, household waste, community building, volunteering, housewives

Introduction: Waste Work and Gender

The rising popularity of and focus on recycling in recent years has been accompanied by increasingly complicated rules for household waste sorting in many Japanese cities. Unlike in many cities in Europe and the United States, which employ technological measures such as single-stream recycling facilities that reduce the burden of separation for residents (Peek 2013), in Japan elaborate garbage separation regulations are the norm. Additionally, because each municipality devises its own waste regulations (in accordance with general national requirements), the separation category and disposal requirements for the same item may be completely different from one town to the next. Accordingly, the number and complexity of separation categories vary significantly by municipality. In a study of waste separation in Japanese cities based on data from 2008, Matsumoto (2011, 329) found that the average number of separation categories was 11.93.

Waste separation is not merely a matter of placing waste items in different containers. In most cases, specific instructions must be followed for recyclable items in particular: plastic containers should be rinsed and dried; PET bottles should be rinsed, dried, and the cap and label removed; milk cartons should be rinsed, dried, cut open, and tied together in a bundle for collection; and so on. All this can add up to a significant amount of time and labor to be performed by residents in the interest of having their garbage collected. (In most municipalities, incorrectly sorted garbage will not be collected; a note explaining the infraction will be placed on the offending garbage bag, and the resident is expected to take it back and put it out correctly on the next collection day.) Kaneko (2010, 27-28) examined the value of citizens' environmental labor contributions in Yokosuka city and found that, in 2006, Yokosuka citizens spent 3,081,376 hours performing voluntary environmental activities, with an estimated monetary value of 3,169,811,491 yen, or 38.5% of the city's environmental services budget. Notably, this figure includes only voluntary environmental activities outside the home; if household waste separation and other domestic labor had been included, the numbers would be even higher.

Who is performing the relatively large amount of unpaid labor required by most cities' waste management systems? Perhaps unsurprisingly, most studies indicate that it is overwhelmingly women. In a 2001 survey, Ohnuma et al. (2005, 4) distributed a questionnaire to Nagoya residents about the city's newly introduced strict recycling policies, with the request that the person "mainly responsible for separating recycling materials and waste in the household" complete the survey. Out of 1442 respondents, 1242 (86.4%) were women and 195 (13.6%) were men, which, as the authors noted with some under-

statement, "[indicated] a sex difference regarding who was mainly in charge of separating recycling materials and waste in the households" (Ohnuma et al. 2005, 4). Forty percent of respondents were full-time homemakers. Other studies, such as Negishi and Yuzawa (2003), Kurisu and Bortoleto (2011), and Na (2009), also indicate that women are more likely than men to be interested in garbage management and to be aware of environmental problems posed by garbage.

Matsumoto's 2011 analysis of sorted waste collection in Japanese cities showed that municipalities tend to "implement recycling programs that fit the demographic profiles of their residents," an unsurprising result considering that most municipalities solicit residents' feedback about the waste collection system both before and after the implementation of new policies (Matsumoto 2011, 325). Matsumoto also found that having fewer wives working full time was correlated with a city having a more complicated separation system: "With respect to full-time workers, we found that a one-hour increase in a husband's market work increased the number of waste separation categories by 0.23 while a one-hour increase in a wife's market work decreased the number of waste separation categories by 0.47, perhaps suggesting that husbands and wives do not take equal responsibility for waste management at home" (Matsumoto 2011, 331).

Taken together, these studies suggest that in Japan, household waste management is the duty of the wife, whether or not she is also engaged in full-time or part-time work outside the home. We might speculate with some justification that the 13.6% male respondents in Ohnuma et al.'s study were bachelors, and that in all or nearly all of married couple households it is the wife who takes primary responsibility for managing waste.

On the other side of this gendered dynamic is waste work outside the home, which is overwhelmingly performed by men in paid employment. Although "waste management" is not tracked as an industry in Japanese employment statistics, jobs associated with waste management – garbage truck driver/waste collector, machinery operator at incineration or recycling facilities, engineers – are in fields that are heavily male-dominated. In 2016, for example, 97.7% of "transport and machine operation workers" were men (Statistical Handbook of Japan 2017). (However, cleaning jobs, which in some institutions may involve collecting, sorting, and removing waste – and are more likely to be part-time – may have a more equal gender distribution: "carrying, cleaning, packaging, and related workers" were 55.3% male and 44.7% female [Statistical Handbook of Japan 2017]).

These numbers indicate a striking gender difference in waste work: men overwhelmingly perform waste work outside the home, for which they are paid, while women overwhelmingly perform the private, unpaid waste work inside the home. Of course, this disparity should not be seen as unusual in the Japanese context; it is merely a particularly stark example of the overall gender imbalance in the Japanese labor force as a whole. In 2016, women's labor force participation rate was 50.3%, compared with 70.4% for men (Statistical Handbook of Japan 2017).

The field of waste work, in the home and the public sphere, can therefore serve as a useful site to examine gender differences in labor, both public and private. In order to do so, I will employ a case study of one city in Japan, looking at the system of waste management in general, as well as gender divisions of labor and belonging in the arena of waste work. The next section will introduce Tsukuba, the city where I carried out ethnographic fieldwork, as a case study of gender and waste management in contemporary Japan.

Waste and Gender in Tsukuba City

In order to study the waste situation in Tsukuba, I carried out ethnographic fieldwork in the city, where I lived for about 18 months from 2014-2016. While affiliated with the National Institute for Environmental Studies in the southern part of the city, I conducted interviews with city officials, waste management employees, members of environmental volunteer associations and neighborhood associations, and "ordinary" Tsukuba residents. I observed planning meetings for the city's official waste management planning council, the opening hours of a local non-profit "recycle shop," as well as the way garbage was disposed of and collected in my own neighborhood. I also collected and analyzed documents relating to Tsukuba's waste management system from the city and other organizations. The following descriptions of waste management and waste work in Tsukuba city are based on these interviews, observations, and documents.

Tsukuba City

Tsukuba is a mid-sized city in Ibaraki Prefecture, about 70 kilometers north of Tokyo. To reach Tsukuba from Tokyo, the fastest route is the Tsukuba Express train line, which runs from Akihabara in central Tokyo to Tsukuba Station. On disembarking, despite the many tall office buildings, hotels, and shopping centers surrounding the train station, you will immediately sense that you are no longer in Tokyo because of the relatively open spaces, the wide roads, and the relative lack of dense crowds of people, even at rush hour. This is not to say that there are no crowds at all: on the contrary, the Tsukuba Express is often packed with commuters during the rush hour periods, but the density is usually much

less than commuter trains in the Tokyo metropolitan area proper. Despite its proximity to Tokyo, Tsukuba is not merely a bed-town for commuters; in fact, more people commute to Tsukuba for work than Tsukuba residents commute to other places. In 2016, 41,298 people commuted to Tsukuba for work, while 29,303 commuted from Tsukuba to another city (Tsukuba City 2017).

Tsukuba is perhaps best known for its designation as a "Science City" (Kenkyū gakuen toshi) home to more than 300 public and private research institutions. It was officially incorporated as a city (*shi*) in 1987, with the merger of four smaller townships (a fifth town joined the city in 1988, and a sixth in 2002), but plans for the creation of "Tsukuba Science City" had been in place since the 1960s (Morris-Suzuki 1994, 180).

The region has experienced steady population growth and economic expansion since the plans for Tsukuba Science City were first announced in the 1960s. In 2016, the city had a population of about 226,000 (Tsukuba City 2017). One official at the Tsukuba City Office explained that there are three types of people now living in Tsukuba City: those whose families had lived there originally (since before the 1960s), those whose families moved there in the wake of the initial announcement of Tsukuba Science City, and those who had moved there following the completion of the Tsukuba Express train line in 2005 (interview by the author, March 26, 2015). This three-way division reveals the rapid changes Tsukuba has experienced even within the past decade; previous studies highlighted the divide between Tsukuba's original residents (*jimoto*) and newcomers who arrived in the 1970s and 80s (Larzalere 2006). The city official's explanation shows that Tsukuba's growth and expansion, rather than bridging existing divisions, has created new ones.

The Tsukuba Express line has provided an impetus for many retailers and businesses to set up shop around the four train stations in Tsukuba city, especially central Tsukuba Station, spurring economic growth. Despite the best efforts of officials at the city's Environmental Bureau, this growth has led to a concomitant increase in waste. Although the overall volume of waste decreased in the mid-2000s as a result of new waste sorting regulations and new fees for business waste, in the past few years the volume has increased to record highs: in 2015, the city produced 94,267 tons of waste (Tsukuba City 2017).

The haphazard development of Tsukuba's waste management infrastructure and regulations reflects its unique postwar history of growing into Japan's "Science City." Official waste collection and construction of waste management facilities in Tsukuba came later than in Tokyo or other large cities, but from the 1970s, waste management practices began changing rapidly. Before the 1970's, there was no official consistent waste collection in the collection of towns and villages that were to become Tsukuba Science City, and residents – largely agricultural workers in rural areas – dealt with waste on their own. Traditional methods included simply burying waste in the ground, or more commonly for farmers, field burning (*noyaki*). Official collection of household waste began in three of the six pre-merger townships in 1972; collection in the remaining three townships started in 1974. Initial waste collection involved a tiny fleet of collection vehicles managed by a regional administrative body called the Mt. Tsukuba-South Regional Governance Association (Chikunan Chihō Kōiki Gyōsei Jimu Kumiai), which was established in 1972 to facilitate collective governance in the six townships prior to the planned merger (Tsukuba City 2010). The Association (which was formally disbanded in 2002, after the merger of the final township into Tsukuba City) was also charged with managing the fledgling city's first waste incinerator, which was first announced in 1972 and completed in 1974. The incineration facility, called the First Sanitation Center (Daiichi Eisei Sentaa), was comprised of two furnaces each capable of processing ninety tons per day. A facility for processing oversized garbage was built in 1977, with a processing capacity of fifty tons per five hours.

These measures satisfied the waste disposal needs of Tsukuba residents until the late 1980s, when increasing consumption from the bubble economy, an increase in population caused by the influx of new research institutions and existing institutions relocating from Tokyo, as well as a growing awareness of environmental concerns throughout the country, led city officials to direct more resources towards improving the waste management system. In 1987, the city began gradually introducing designated bags for burnable garbage – clear plastic bags marked "Tsukuba City Burnable Garbage" (*Tsukuba-shi moyaseru gomi*) which could be purchased from local supermarkets and convenience stores. The designated bag system was fully implemented throughout the city by 1992. In 1991, the same year that Japan passed its first national recycling law[❖1], Tsukuba City introduced a series of regulations to increase recycling (which previously had only been undertaken voluntarily, by private companies). In conjunction with a number of new recycling regulations, the city began separate collection of recyclables including aluminum and steel cans, glass bottles, paper, and cloth. Collection of used milk cartons also began at elementary and middle schools, civic centers, and welfare centers in the city. The city introduced designated bags for cans and bottles; unlike the bags for burnable garbage, bags for recyclables were distributed for free (Tsukuba City 2010). As part of an overhaul of the garbage collection system resulting from the construction of the new Clean Center (Ku-

riin Sentaa) waste management facility, in 1998 the burnable garbage bag system was changed to include three sizes of bag – 20, 30, and 40 liters – and designated bags for recyclables were no longer required. Additionally, the city implemented a subsidy system for volunteer groups collecting recyclables, paying groups three yen per kilogram of collected material, with a maximum subsidy of 25,000 yen.

In 1992, Tsukuba's evolving waste management system was put to the test in the city's first major "garbage emergency" (*gomi hijō jitai*). In April, the waste incineration facility was shut down for two days for a routine annual inspection. On the day that it resumed operation, the waste brought in by garbage trucks exceeded the amount that could be processed, and about thirty garbage trucks were forced to leave with the garbage still piled inside. When the same thing occurred the following day, the city declared a garbage emergency, placed limits on the number of garbage trucks entering the incineration facility, and established a committee to devise emergency countermeasures. For one month, the city limited waste collection to kitchen scraps, city officials provided "separation guidance" (*bunbetsu shidō*) at 335 locations around the city, and the incinerator was refurbished to increase its processing capacity. As a result of these measures, normal garbage collection service resumed a month later (Tsukuba City 2010).

The revisions to the national Waste Management and Public Cleansing Law (Haikibutsu no Shori oyobi Seisō ni kansuru Hōritsu, abbreviated Haikibutsu Shori Hō) in 1991 required municipalities to take more proactive measures to with regard to waste disposal planning. In order to comply with the new regulations, in 1994 the city presented the Tsukuba City Fundamental Plan for General Waste (Garbage) Management (Tsukuba-shi Ippan Haikibutsu [Gomi] Shori Kihon Keikaku). The plan was to guide Tsukuba's waste management from 1995 to 2009, with periodic revisions. A mid-term revision was undertaken in 2000, and a late-stage revision in 2005. In 2010, the city's Second Fundamental Plan for General Waste (Garbage) Management, for the period from 2010 to 2021, was published; this plan was revised in 2015. The purpose of these plans was to rationalize long-term waste management planning (Tsukuba City 2013).

In the late 1990s and 2000s, the city of Tsukuba began to focus on technological improvements and increased recycling as solutions to increasing amounts of garbage. This was in line with the general trend of waste management and recycling in Japan as a whole; various cities began increasing and strengthening waste regulations and recycling policies, while at the national level several new recycling laws were introduced in quick succession. In Tsukuba, a new waste processing facility called the Clean Center (Kuriin Sentaa), which had been in planning for several years, came into operation in 1997. The new facility contained three furnaces each with a processing capacity of 125 tons per day, and was capable of generating electricity from the incineration process. The original First Sanitation Center incineration facility, which by that time was somewhat outdated technologically, ceased operations following successful trials of the Clean Center incinerator (Tsukuba City 2010). In accordance with the recently implemented national Home Electronic Appliances Recycling Law (Kaden Risaikuru Hō), Tsukuba ceased collecting televisions, air conditioners, refrigerators, and washing machines as oversized garbage in 2001 (the new law required that these items be collected and recycled by the manufacturer). In 2003, the same measure was applied to personal computers. Collection of PET bottles twice a month began in 2001.

In 2005, several significant changes were made to the waste management system, which successfully, if temporarily, reduced the overall volume of waste in Tsukuba. First, oversized garbage (*sodai gomi*) was excluded from regular collection and changed to a separate collection, fee-based service. Second, the city began producing and distributing a handbook explaining how to sort and put out garbage. Most significantly for waste reduction in the city, a fee system was introduced for processing business waste (*jigyōkei gomi*). Previously, waste from businesses was collected in the same manner as household waste, with the only fee being the purchase of designated bags for burnable waste, but the new regulation charged a set amount for each kilogram of waste produced by a business. This policy both increased the city's revenue and created an incentive for businesses to produce less waste (Tsukuba City 2010).

Waste Management in Present-Day Tsukuba

In 2012, Tsukuba City produced 84,307 tons❖2 of general waste, or 1,068 grams per person per day. Out of this total amount, 34% was business waste and 66% was household waste. Compared to other Japanese cities of its size, Tsukuba has a larger than average amount of business waste, and an average amount of household waste, meaning that its total waste overall is higher than both the national and prefectural averages (Tsukuba City 2013). City offi-

❖1…The Resource Recycling Promotion Law (Saiseishigen no Riyō no Sokushin ni kansuru Hōritsu), also known as the Recycling Law (Risaikuru Hō), was passed by the Diet in April 1991 (Matsufuji 2003).

❖2…This number does not include approximately 4,460 tons of waste resulting from a tornado that struck the northern part of the city in 2012 (tornado waste is not included so that waste statistics can be compared year to year to assess the city's progress in reducing waste).

cials are concerned about the high amount of business waste (while acknowledging that it is perhaps a natural consequence of housing an outsize number of organizations and institutes), and plan to strengthen measures to encourage businesses to produce less waste (interview by the author, March 26, 2015).

Tsukuba's 2012 recycling rate was 11.8%, or about half the average national recycling rate of 20.4% (Tsukuba City 2013). Unlike most other cities, Tsukuba does not collect and recycle packaging plastic, which is one reason for the low recycling rate; another is the low rate of collection of mixed paper for recycling. Officials at the waste management office thought that residents might not realize that the city collected mixed paper as well as the more common newspaper and cardboard, and began to include specific instructions for mixed paper separation in the 2015 garbage collection calendar (interview by the author, March 26, 2015).

◉Table 1. Waste separation categories

Category	Examples	Method of Disposal	Collection Frequency
Burnable garbage (*Moyaseru gomi*)	Kitchen scraps, plastic containers and packaging, rubber, CDs and videotape, small yard waste, styrofoam, leather items, wooden items, etc.	City's designated bag (20, 30, or 40 liters)	Twice per week
Cans (*Kan*)	Cans or tins for drinks, foods, or snacks	Transparent or half-transparent plastic bags (up to 40 liters) Wash out the cans before putting out	Twice per month
Glass containers (*Bin*)	Glass bottles for drinks, glass containers for food	Transparent or half-transparent plastic bags (up to 40 liters) 1) Remove cap 2)Wash out inside	Twice per month
Spray containers (*Supuree yōki*)	Spray containers	Transparent or half-transparent plastic bags (up to 40 liters) 1) Remove cap 2) Completely use contents 3) In a safe place far from open flames, make a hole	Twice per month
PET bottles (*Petto botoru*)	Plastic bottles for drinks or condiments (non-oil) with the PET mark	Transparent or half-transparent plastic bags (up to 40 liters) 1) Remove cap 2) Remove label 3) Wash out inside	Twice per month
Non-burnable garbage (*Moyasenai gomi*)	Ceramics or glassware, lightbulbs (non-LED), cookware, aluminum foil, pocket heater packs, rod-shaped items like metal bats or golf clubs (up to 150 cm), composite items of metal and plastic or small electrical appliances no more than 50 cm long, lighters (with gas removed)Broken ceramics, glassware, kitchen knives or scissors should be wrapped in paper and marked "dangerous" (*kiken*)	Transparent or half-transparent plastic bags (up to 40 liters)	Twice per month
Used paper and clothing (*Koshirui, koirui*)	Newspapers and fliers, magazines and books, cardboard (up to 1 m), paper cartons (wash, cut open and dry), clothing (clothes, wool curtains) Please cooperate with mixed paper collection Mixed paper: paper larger than business cards such as snack boxes, office paper, etc.Loose paper should be placed in a paper bag	Separate by type and tie with string (On rainy days, please put in a plastic bag)	Twice per month

Source: Tsukuba City Guide to Garbage Separation and Disposal (Gomi no wakekata, dashikata gaido) 2015.

Waste Work in the City

In accordance with national regulations, municipalities in Japan are responsible for managing waste within their jurisdictions. Depending on the unique circumstances in each city, some municipalities choose to carry out waste management duties directly, while others prefer to subcontract the work to private companies. Tsukuba, along with about 60% of municipalities in Japan, subcontracts waste collection and final disposal to a variety of private companies, which are selected annually from a competitive bidding system. The city's Waste Management Division oversees, plans, and administers Tsukuba's municipal waste management, but nearly all of the manual labor involved is performed by employees of subcontracted private companies. With the exception of a few women working in the city Waste Management Division and in one clothing recycling company, all of the waste management workers I observed in Tsukuba were men.

Household waste is collected from Tsukuba's 4,319 collection stations and taken to the appropriate waste management facility by contracted (*itaku*) waste transport companies. There are over 60 such companies for transporting household waste including burnable, non-burnable, and recyclable waste; in total, they operated 101 trucks and had a carrying capacity of 231 tons in 2013. For business waste, businesses and organizations can make a private contract with one of more than 40 licensed (*kyoka*) business waste transport companies; in 2013, these companies together operated 241 trucks with a carrying capacity of 995 tons (Tsukuba City 2013).

Companies that collect burnable garbage typically use a compactor truck which compresses garbage [❖3]; when full, the trucks take the waste to the Clean Center. If the garbage at the collection separation is not correctly sorted (for example, burnable waste put out in a regular plastic bag instead of a designated bag), the workers do not collect it, and it is the responsibility of the household which put it out to correct the error. Garbage which is mistakenly put out on the wrong day may be left in place until the correct day comes around, or it may be dealt with (typically, transported to the Clean Center by a volunteer) by the neighborhood association or the contracted cleaning company (most apartments contract a private cleaning company which also manages the garbage collection station).

Waste Work in the Home: Separation and Disposal

Tsukuba's separation regulations are fairly typical for a city of its size. The city provides a regular collection service for seven categories of household garbage; four additional categories have collection by appointment or drop-off at the city office or other locations. Trash that does not fall into these categories must be disposed of individually (for example, by paying a private waste disposal company to collect and process the waste). Each category of waste is collected on a designated day, and should be put out in the correct receptacle (i.e., burnable waste must be put into designated bags, while any type of plastic bag is acceptable for unburnable waste, cans, glass and PET bottles, while cardboard must be flattened and tied together with string). Table 1 shows Tsukuba's waste separation categories, along with examples for each category, method of disposal, and collection frequency.

Although these instructions may seem complicated to those unfamiliar with Japanese garbage regulations, Tsukuba's waste separation requirements (as of 2016) are relatively simple compared with those of other cities in Japan. This is primarily because plastic containers and packaging are considered burnable waste, and do not have to be cleaned and separated for recycling as they are in many other cities.[❖4] When I asked informants what they thought of waste separation in Tsukuba, nearly all of them replied "It's easy" (*raku*), often comparing Tsukuba's lax requirements with more difficult separation regulations in other cities where they'd lived.

A calendar for garbage disposal, which also contains instructions for separation, is distributed to Tsukuba residents once per year, in March. Residents are instructed to put out their garbage before 8:00 a.m. on the designated day. Depending on the nature of the waste collection station, citizens may be told to put out garbage only in the morning on the designated day, or they may be allowed to start putting it out the night before. There is a wide range of different types of garbage collection stations in Tsukuba, from a section of the road covered by a net, to a metal container with a closeable lid, to a shed or room with a locked door. Because crows and other animals sometimes tear into garbage bags and create a mess, closeable containers, wire cages, or closed-off rooms are overwhelmingly favored by residents and waste workers alike. Apartment buildings typically have one collection station near the building for all residents to share, while detached houses

❖3…Occasionally, spray cans incorrectly placed in burnable garbage cause explosions when compressed in this type of truck; two such incidents occurred in Tsukuba in 2014 (interview by the author, April 17, 2015).

❖4… The national Containers and Packaging Recycling Law (Yōkihōsō Risaikuru Hō) which was passed in 1995 and came into effect in 1997, encourages municipalities to promote recycling of certain types of packaging, and requires companies that sell products using the designated types of packaging to pay an annual fee to the Japan Containers and Packaging Recycling Association (JCPRA) for recycling. The law was amended in 2000 to add non-PET plasic packaging to the targeted packaging materials (Ministry of the Environment 2012). When I observed Tsukuba City's waste management planning committee meeting in 2015, one major point of discussion was how to best implement collection and recycling of plastic packaging.

share a neighborhood collection station. Because the collection station is sometimes far from a person's home, some households transport their garbage to the waste collection station by car, but for most people their designated collection station is within easy walking distance (interviews by the author, June 10, July 15, July 17, and July 22, 2015).

Since garbage collection is performed by many companies over a wide area, the time of collection can vary from neighborhood to neighborhood. Most of my informants reported that burnable garbage is collected from their stations in the morning, but one woman said the typical collection time in her area was 2:00 p.m., so she usually put out the garbage around noon. The timing of garbage collection can have implications for the gendered division of labor in the home: the woman who told me she takes the garbage out at noon also mentioned that because of this timing, she only ever saw women in her neighborhood taking out the garbage (interview by the author, July 17, 2015). In other words, only housewives who could be home in the middle of the day were able to take the garbage out at the correct time. Another informant told me that while she herself was the one to take out her family's garbage early in the morning, there were "lots" of households where men were the ones to take out the garbage, on their way to work in the early morning. However, in her own household, she felt that it was her obligation to take out the garbage: "As for me, I was told by my mother, 'It's not good to let a man take out the garbage on his way to work,' so that's why I take out the garbage myself" (interview by the author, July 17, 2015). In fact, nearly all of my married informants indicated that the woman was primarily responsible for taking care of waste in the home, including taking it out for collection. The exception was a young man in his twenties whose wife wasn't present during the interview and home visit; he stated that he and his wife divided waste-related chores more or less evenly, "whoever has the day off" (interview by the author, February 15, 2016). This exception should probably not be taken as an indication of changing gender roles among the younger generation, however; another young couple in their twenties answered my questions together, and the wife indicated that she did the vast majority of waste work around the home.

Household Waste Work and Daily Life

The most obvious impact of waste separation requirements is the increase in housework it requires. As previously mentioned, this work largely falls on the shoulders of women in Japan, whether they are full-time housewives or not (Matsumoto 2011). This is also the case in Tsukuba. In a survey of one neighborhood of 1318 households in Tsukuba carried out in 2013, Kojima et al. (2015, 120) found that women were primarily responsible for managing household waste in 71.5% of households. Although my own small study cannot be taken as a representative sample of either Tsukuba or Japan in general, in the in-depth interviews I carried out with Tsukuba residents, I found that women were responsible for the majority of household waste work in twelve out of fourteen households.

Related to the increased physical labor of waste sorting is the mental labor of keeping track of the garbage disposal (*gomi dashi*) requirements – which type of garbage goes out on which day, what time the garbage needs to be taken out, and how to fit this into one's daily schedule. This mental labor is in many cases more arduous than the physical tasks of washing, cutting, separating, etc., but is typically overlooked in studies of household waste work. Most of the Tsukuba residents I interviewed kept their garbage disposal calendar on their refrigerator, where they could consult it daily to check which type of garbage needed to be taken out next.

Additionally, waste separation requirements take physical form in the spatial arrangements residents make in their homes to accommodate different categories of garbage. Because some types of waste – cans, PET bottles, glass, etc. – are only collected twice a month, they must be stored for up to two weeks before they can be put out for collection. (Some apartment buildings have waste storage areas where recyclables can be placed at any time, but most areas simply have a waste collection station where only the type of waste to be collected on that day may be placed.) My informants demonstrated a wide variety of strategies for storing waste, ranging from separate labeled bins for each type of waste neatly stacked in the kitchen area, to three or four large plastic bags stored at the bottom of a closet or next to the door.

Importantly, not one of my informants indicated that they found waste-related housework to be a burden or thought that it impacted their life negatively, especially since the separation requirements in Tsukuba were not very strict. Instead, they regarded it simply as a duty, or an expected part of life. Almost all of them followed the waste separation requirements correctly as a matter of course; only one person I interviewed, a single man in his thirties, admitted that he wasn't really concerned about whether he was sorting the garbage correctly. The rest of my informants, both single women and married couples, explained their typical garbage management strategies matter-of-factly. Unlike the housewives in Ben-Ari's (1990) study, most of the women I interviewed in Tsukuba did not seem particularly proud of their garbage sorting expertise, instead regarding their activities as entirely typical and expected. Many of them, when asked if they would

be willing to show me their homes and discuss how they managed their household waste, demurred with "Well, what I do is nothing special, will it really be useful?" or the like. (However, it is possible that those who agreed to my interviews were more confident about their waste arrangements than average; there were a few people I invited or who my other informants invited to be interviewed who declined to participate because they were not comfortable showing off their homes.)

There were two exceptions, households with exceptional household waste management practices who were justifiably proud of the fact. The first of these was the Arakawa household, a middle-aged couple living in a detached house in the southern part of Tsukuba city. Their house was surrounded by an unusually large area of open land, which they used for a large garden. They prided themselves on having a very eco-friendly household: they composted kitchen waste to use as fertilizer, and collected rainwater in large buckets outside to use to water their garden. Although both members of the couple were enthusiastic about their environmental activities, Mrs. Arakawa told me she was exclusively responsible for waste-related chores in their home. (She, like several other informants, also immediately mentioned that she often sees men taking out the garbage in her neighborhood as well.)

The other was Mrs. Tanaka, a 72-year-old woman who became my key informant as well as my good friend. She was the founder of the volunteer initiative Tsukuba Recycle Market, as well as the main organizer of the small recycle shop and non-profit organization Creative Recycle. She was very concerned about waste, and not only through her volunteer activities. Her home was also a testament to her *mottainai* (don't waste) sensibilities. She made every effort to recycle anything that could be recycled – saving the caps of plastic bottles to put in the separate collection bin at the grocery store rather than put them in the burnable waste with other plastics, rinsing and drying Styrofoam trays to recycle at the grocery store, and most notably, rinsing and drying used plastic wrap to be reused two or three more times. In many ways, Mrs. Tanaka reminded me of the "Mottainai Baa-san" (No-Waste Grandma) character from Shinju Mariko's popular children's book series (see Siniawer 2014 for a discussion of this series in relation to discourses of *mottainai* in post-war Japan). She was an energetic and formidable woman who would tolerate neither waste nor nonsense in her surroundings.

In contrast, another informant, Mr. Nakano, a researcher in his 30s living alone in a small apartment, told me frankly that he doesn't care about doing the waste separation properly. He had plastic bags in a closet or by the door for glass and cans, but just about everything else he put into the 40-liter burnable garbage bag. Mr. Nakano, the only single man who participated in my household interviews, was also the only one who did not at least try to appear as though he cared about following the separation rules.

Most of the rest of my informants fell somewhere between these extremes, doing their best to follow the separation rules but not going out of their way to recycle everything. Mrs. Murata, a housewife in her late 30s, is a good example of this.

The Murata family lives in a detached house in a modern residential neighborhood outside the city center. The houses in the neighborhood all looked very similar, suggesting a planned housing development. The living room and kitchen area of the house, where I interviewed Mrs. Murata, was neat and well-appointed. Mr. Murata works for a German company, and Mrs. Murata is a full-time housewife (*sengyō shufu*). They have three school-aged children, and moved to Tsukuba from Chiba in 2010 to be closer to Mrs. Murata's family in Tsuchiura, a nearby city.

Compared to places she'd lived previously in Chiba and Tokyo, Mrs. Murata said, Tsukuba's waste separation rules were fairly similar. She thought the separation rules in Tsukuba were very easy (*raku*), almost as if there were no separation at all. This sentiment was repeated by most of my informants. In

Figure 1. A garbage disposal calendar affixed to the side of the refrigerator of a Tsukuba resident, February 2016.

Figure 2. A two-tiered garbage bin for separated recyclables in the apartment of a Tsukuba resident, February 2016.

Tsukuba, unlike in many other Japanese cities, plastic containers do not have to be washed and separated, but can simply be tossed into the burnable garbage, waste separation is largely a simple matter of tossing different materials into separate bins or bags. (When I mentioned my research to friends and acquaintances living outside Tsukuba, many of them mentioned separating plastic waste as the most burdensome aspect of their city's waste separation rules.)

Mrs. Murata gave me a brief tour of how waste was managed in her home. The first stop was the kitchen: in the corner, next to the back door, was a large, beige plastic waste bin, which she explained was for burnable garbage. To the left were paper bags for newspapers and mixed paper waste. She explained that she receives the bag for newspapers from the newspaper companies, and she received the bag for mixed paper from her child's school. (There was also a large bag of rice in this space.) Hanging on the door handle were three small plastic bags, for non-burnable waste, glass, and aluminum or steel cans. Bottles and cans would be rinsed out and dried before being placed in the bags. She explained that normally, the latter three were placed in a storage bin outside (she opened the door to show me), but for now, because it might snow (in early February), and because the family didn't produce much of these types of waste, she just kept them in the small bags inside.

Noticing a net in her sink drain, I asked her how she deals with kitchen waste (*nama gomi*). She explained that while she is cooking, she just piles everything up in the sink together; later, she puts it all in a small plastic bag and then puts it in the large waste bin in the corner. This, too, was typical of my informants: almost all of them used sink nets, either over a separate drainable container in the corner of the sink, or placed over the removable strainer inside the drain, as in Mrs. Murata's kitchen. Japanese sinks are designed with a removable grate for easy cleaning and to prevent waste matter, typically from food preparation, from going down the drain. The disposable nets, placed over the drain, make it easy to scoop up the organic waste from food preparation or scraped off dishes and place it into the burnable waste (or first into a small plastic bag, as in Mrs. Murata's case; several of my informants also did this, in order to reduce the smell from raw kitchen waste).

Figure 5. The waste collection containers in Mrs. Murata's neighborhood.

Mrs. Murata usually takes out the garbage at 6:00 a.m. – she takes it down the street to the neighborhood waste bins, then picks up her newspaper before going back in. She takes out burnable garbage twice a week (both of the collection days), usually in 40-liter bags, but sometimes in 30 liter bags if it's less than usual. She said that her burnable garbage is typically composed of kitchen waste, tissues, garbage from the vacuum cleaner, and food packaging. She takes out unburnable garbage and recyclables when they've accumulated sufficiently – usually about once a month.

Mrs. Murata told me that her neighborhood, being new, did not have a neighborhood association (which in older neighborhoods often take on the task of monitoring and cleaning waste collection stations). Instead, the collection sites, as well as street cleaning, were managed by a management association (*kanri kumiai*). While we were outside looking at the collection station, she pointed out a man cleaning the street a few houses down and explained that he was sent by the association.

The garbage collection station for Mrs. Murata's neighborhood was located a few houses down the street from hers. It consisted of two large metal

Figure 3.The waste corner in the Murata family's kitchen, February 2016.

Figure 4. The sink in the Murata household: a disposable net covers the drain.

containers with lids that lifted, and which could be locked, although neither was. The left container had a sign warning people outside the neighborhood not to deposit garbage there; the right container had the collection schedule pasted on it. Both containers were empty.

This kind of metal container was fairly common for waste stations in Tsukuba; other types included enclosed structures with lockable doors, wire cages, or simply an open concrete storage space with a net covering it. The net is necessary but not in all cases sufficient to stop wild animals, especially crows, from getting at the garbage, which is why most neighborhoods opt for a metal box or cage. Although the locations for waste collection stations must be approved by the city, the city is not responsible for their construction or upkeep. As Mrs. Murata explained, the households in her neighborhood paid a fee to a company to manage the waste collection stations, and it is likely that similar fees paid for the initial installation of the containers as well. In other neighborhoods, these tasks fall to the neighborhood association. In one neighborhood in an outlying area of the city, the head of the neighborhood association told me his group had struggled to raise money to upgrade their waste collection stations from nets to metal cages to prevent crow problems; although they received a small subsidy from the city for this purpose, the majority of the cost was paid from membership fees. At the time of my interview in 2015, the neighborhood association had replaced all but seven of thirty-four collection stations with metal cages (interview by the author, February 17, 2015).

Overall, Mrs. Murata made it clear that she didn't find household waste work to be burdensome at all and said she didn't experience much inconvenience (*fubensa*): "In the regular garbage, there's hardly any separation" (interview by the author, February 2, 2016). For Mrs. Murata, as for most Tsukuba residents I interviewed, waste separation work was simply part of their daily routine, something to be done as a matter of course. Household waste separation, and the reasons it might be required by the city, was not something most of my informants thought much about.

Figure 6. A wooden cage waste collection station in an outlying area of Tsukuba, February 11, 2015.

Figure 7. A metal cage waste collection station in a central area of Tsukuba, February 10, 2016.

Figure 8. A net-covered concrete waste collection station in an outlying area of Tsukuba, March 10, 2016.

Waste Work in the Community: Neighborhood Associations

The waste work performed by residents as part of neighborhood associations – unpaid labor performed in public – can perhaps be considered a type of community waste work. Neighborhood associations (*jichikai* or *chōnaikai*; in Tsukuba, they are officially called *kukai*) have a long history as organizing units of residential life in Japan (Bestor 1989; Pekkanen et al. 2014). In addition to social activities like organizing the local festival or arranging trips to hot springs, neighborhood associations also help regulate some aspects of local waste management on a (typically unpaid) volunteer basis. In many neighborhoods, maintenance of garbage collection stations is the collective responsibility of all association members. (As a result, there is significant social pressure on residents to join the association – those who decline are widely seen as shirking their responsibilities and increasing their neighbors' burden.)

In Tsukuba, central, more developed, and more populated areas tend to have more apartments and

collective housing and fewer neighborhood associations. Outlying, comparatively rural areas (whose residents also tend to be older) have a stronger tradition of neighborhood associations. This is part of the lingering division between original residents, 1970s-1990s newcomers, and the newest arrivals who moved to the city after the completion of the Tsukuba Express train service in 2005. Larzalere (2006, 120) notes that when "newcomer" families arrived in Tsukuba in the 1980s, they often felt unwelcome in or declined to join existing, *jimoto* neighborhood associations, and set up their own new, separate neighborhood associations. I found that most of the "new newcomers" I spoke to, who arrived in the 2000s-2010s, did not join a neighborhood association and many lived in areas that did not have an association at all. In these latter neighborhoods, the community waste work that was traditionally carried out by neighborhood association members was outsourced to private companies, financed by fees paid by each household in the neighborhood.

In the *jimoto* neighborhoods, most of which are facing challenges associated with an aging population, neighborhood association membership remains strong. In one outlying area of Tsukuba, Morinosato, the neighborhood association has a participation rate of over 90%. The association members inspect and clean the waste collection stations for their area (each block has between 15 and 75 households) on a rotating basis (*tōban seido*). Morinosato currently has 34 collection stations. In an interview, the head of the neighborhood association guessed that about 90% of the members who do the waste station management are women, and elderly women in particular: 39.15% of Morinosato residents are over the age of 65 (interview by the author, February 17, 2015).

Although most people in Morinosato sort their garbage correctly, the neighborhood regularly has problems with people putting out garbage the night before (rather than in the morning before 8:00), or on the wrong day. When people put out oversized garbage (*sodai gomi*) at the waste collection stations (rather than making an appointment and paying a fee to the city to have it collected), the neighborhood association either calls the city Waste Management Division to have it collected as illegally dumped waste (*fuhō tōki*), or has compensated volunteers (*yūshō borantia*) collect it and take it to the Clean Center. There are 16 volunteers; they are paid 2000 yen for 3 hours. These volunteers are also the ones who collect the garbage from elderly people who have requested assistance. When garbage has been put out on the wrong day (whether as a mistake, or on purpose as when the person is leaving to go on a long trip and doesn't want to leave the garbage inside), first it is the responsibility of the person who made the mistake to correct it; if they don't, the neighborhood association member whose turn it is to manage the waste station is supposed to take care of it, but doesn't always, so sometimes the incorrect garbage is just left there until its collection day comes around. Sometimes the volunteers take this kind of garbage to the Clean Center.

The neighborhood association also organizes the collection of newspapers, which are sold to recyclers. The proceeds are used to run the children's association (*kodomo kai*). The neighborhood association used to also collect and sell aluminum cans, but they stopped when the price of aluminum fell. In 2012, they experienced a problem with someone stealing the recyclables before they could be collected, but the association strengthened the patrol, and the problem stopped (interview by the author, February 17, 2015).

One of the main concerns of the Morinosato neighborhood association is the lack of involvement by young people. The head of the association speculated that since young people work five days a week, they don't want to spend their weekend on neighborhood association activities, and as a result, association officers are mostly elderly people. Furthermore, although Tsukuba's population is growing, the influx is only to the central parts of the city; areas on the periphery have declining and aging populations (interview by the author, February 17, 2015). This certainly seemed to be the case among the younger Tsukuba residents I interviewed as well: most lived in more central areas and were not interested in joining a neighborhood association even if their area had one.

Waste Work in the Community: Volunteer Activities

In addition to the community waste work of neighborhood associations, most of which is considered a social obligation, some Tsukuba residents use waste-related work as a more active form of community engagement through volunteer activities. One example of this is Tsukuba Creative Recycle (NPO Hōjin Tsukuba Kurieitibu Risaikuru), a non-profit organization based in Tsukuba. Its principal activity is operating a second-hand "recycle shop;" it also donates clothes and other items to those in need in Japan and overseas. The organization is one of only a few non-profit recycle shops in Tsukuba (other recycle shops, such as the large chain stores Wonder Rex and Off House, are run by for-profit companies).

Tsukuba Creative Recycle was founded in the early 1990s by Terada Kumiko, the wife of a public employee at a research institute affiliated with the Ministry of Education, Culture, Sports, Science and Technology (Monbukagakushō), who moved to Tsukuba with her husband in the 1970s during the earliest wave of institution transfers to Tsukuba Science City. At that time the Tsukuba area was rela-

tively undeveloped, and the move to a new location where one had no roots was isolating for many housewife newcomers (Larzalere 2006). In the face of this isolation and lack of community, Mrs. Terada started a co-op, personally driving to pick up food from farms and shops and delivering it to members, and was involved in a wide variety of volunteer activities. When she noticed Tsukuba's garbage issue in the 1990s, she and two friends organized a discussion group to decide what to do about the issue. They began organizing a "recycle plaza" – a place for people to sell and buy used items that might otherwise be thrown away – once a month in a public park. This group became the Recycling Promotion Assembly (Risaikuru Suishin Kaigi), and eventually NPO Creative Recycle (interviews by the author with Creative Recycle volunteers, February 6 and February 16, 2016).

The organization, which was incorporated officially as an NPO in 2003, operated small "recycle shops" which sold donated second-hand clothing and household goods at extremely low prices in several locations in Tsukuba. Since 2010, the group's recycle shop has been located in the Chūō Park Rest House inside a large public park near Tsukuba Station. This building is owned by the city, and the organization is able to occupy it rent-free due to its NPO status. From 2011 until the present, the shop's opening hours have been 13:00 to 15:30, five days a week. Typically, only one or two volunteers staff the shop on any given day, and there are currently five or six volunteers who work at the shop on a rotating basis.

> According to its pamphlet, the group has the following three goals:
> 1) Widespread promotion of garbage reduction and reuse/recycle activities among regular people in order to establish a sound material-cycle society with a low environmental impact
> 2) Promotion of social participation by elderly people and people with disabilities through our activities
> 3) International support activities for developing countries

The second goal of encouraging "social participation" is perhaps one of the most important functions of Creative Recycle. During one of my observations, a volunteer had been chatting with an elderly customer; when the customer left, the volunteer explained that this type of interaction was not incidental, but an essential aspect of the shop's purpose: "This kind of conversation, right, speaking [with people], communicating, is also really important" (interview by the author, February 16, 2016). I noticed this dynamic every time I visited Creative Recycle – the volunteers always made an effort to speak with every customer, and many returning customers became friends with the volunteers.

The volunteers are all full-time housewives, except for Mrs. Sato who works part-time at a local newspaper. Most of them are in their 60s or 70s; the youngest, Mrs. Kaneda, is in her late forties. Many of them joined Creative Recycle relatively recently, within the last few years. It is clear that the main impetus for volunteering at Creative Recycle, at least for current members, is social pressure from friends and acquaintances (rather than, say, a preexisting interest in recycling). Most of the women are or have been involved in other types of volunteer activities, like the parent-teacher association at their children's school (Mrs. Kaneda told me that at her children's school, parents are actually required to participate in the PTA), teaching CPR classes, being a school lifeguard, or helping at a group for disabled children.

In her study of Tsukuba housewives in the late 1980s and early 2000, Larzalere (2006) notes that the isolation of starting a new life, devoid of family connections and a deep-rooted community, caused many women in Tsukuba to find an outlet in volunteer work such as parent-teacher associations, government housing associations, or grassroots organizations (Larzalere 2006, 101). Similarly, my observations over several months left me with the strong impression that the most vital aspect of Creative Recycle is the opportunity for community interaction and socialization among customers and staff, most of whom are older women. I witnessed numerous conversations between customers and staff that indicated years of friendship or at least friendly acquaintance; one woman who came to the shop from another city said she used to live in Tsukuba and had moved away a few years ago, but still returned to the shop occasionally to donate items and talk with her friends among the volunteers. For both customers and volunteers, Creative Recycle represents an important outlet for long-term social interaction and a valuable site of community building.

Discussion: Waste, Gender, and Community Belonging

During the post-war economic boom, labor and family patterns in Japan developed into a characteristic system, organized around the male and female "archetypes" of the salaryman and the full-time housewife (Goldstein-Gidoni 2017, Osawa 2002). These ideals are related to issues of national identity and belonging, including citizenship. Mackie (2002, 203) argues that "the archetypal citizen in the modern Japanese political system is a male, heterosexual, able-bodied, fertile, white-collar worker," and that this model of the ideal citizen limits in practice the access of those with marginalized identities to full citizenship. In Japan, the social, economic, and po-

litical order is based on "the assumption that most people will live in heterosexual nuclear families with a male breadwinner and female primary caregiver" (Mackie 2002, 206). Ito (2005, 54) notes that the family is in fact constitutive of Japan's, and indeed any nation's, "citizenship regime."

Western feminist scholarship on citizenship has frequently pointed out that "the public and private do not exist as discrete, separate spheres but rather exist in an interactive, overlapping relationship by demonstrating that … men's public citizenship relies on being supported by the care and domestic work performed by female non- or partial citizens in the private sphere" (Munday 2009, 256). These scholars emphasize that "universalist" European and North American models of citizenship elide or ignore the unpaid private care work, typically performed by women, that allows men to exercise their full citizenship rights in the public sphere. They have therefore proposed a variety of new models of citizenship that take gender differences and other differences arising from marginalized identities into account (Siim 2000, Lister 1990).

I would argue that in Japan, however, rather than a "universal" model of citizenship that assumes a male citizen and ignores women, in the postwar period the Japanese state adopted an explicitly gendered citizenship regime, which advocated different ideals of citizenship for men and women. In Japan the role of the full-time housewife was valorized and held up as the ultimate aspiration for women, and remains the standard today (Goldstein-Gidoni 2017).

LeBlanc (1999) makes the important observation that the role of housewife is in fact a public, not a private, role in Japan. She points out that the construction of the ideal female citizen, as promoted by the state and social elites in the good wife, wise mother (*ryōsai kenbo*) ideology, positioned women's role in the home as part of their service to the state. Similarly, women's increasing participation in certain areas of public life beginning in the 1920-30s was predicated on their roles as housewives: "Larger roles for women in local government were justified on the basis of the connection between the business of local government – garbage disposal, poor relief and health policy, for example – and the experience that women gained through the management of their homes. ...The 'wife and mother' components of housewifery are thus markers of a *public* role for women, not their exclusion from the public sphere" (LeBlanc 1999, 67-68, emphasis in original).

It is important to emphasize that not only the "wife and mother" aspect, but also the performance of housework itself, is a component of the public housewife role. Although LeBlanc's work does not focus in detail on housework itself, the responses she quotes from her informants tend to indicate that housework is in fact the core of the housewife identity:

> When I asked an informant if she considered herself to be a housewife, she often hesitated before replying, and the reply would usually go something like this: "I guess I am a housewife because I am responsible for the cooking and the cleaning and the home." But if I asked her if she were a typical housewife … she would be more likely to demur. She could not be considered a "housewife-like housewife" because she failed to devote herself fully to things like cooking and cleaning that were a housewife's mark, my informant would explain. (LeBlanc 1999, 42)

Most of a housewife's domestic work is visible only to her family (and, as many of LeBlanc's housewife informants complained, undervalued by society). However, one form of housework does move outside the home and into public space: household waste.

Managing household waste is perhaps the most visible form of housework as part of the public role of housewife. In Japan, garbage disposal is a public and highly visible activity because in most municipalities garbage is collected from a communal pickup site and must be disposed of in transparent bags. In some locations, residents are requested or required to write their family names on the bags, making garbage disposal even less anonymous. It is often pointed out that garbage disposal in Japan is a public activity that can lead to social sanction. Ben-Ari (1990) explicitly links garbage disposal to housewives' identities. In describing the new garbage disposal rules implemented in the town of Otsu in the 1980s, he highlights city officials' apparent assumption that, as "trash-related matters belong almost exclusively to the domain of women," Otsu's "professional housewives" would conform to the new rules as part of their "self-conception" as wives and mothers: "That is, city officials expected the new arrangements – involving the public presentation of the household and the kitchen – to become an aspect of housewives' self-valuation and valuation by others" (Ben-Ari 1990, 484).

Proper management of household waste is therefore one aspect of the public role of housewife. It is also a conspicuous signal of community belonging. Non-Japanese who have lived in Japan are likely keenly aware of the widespread stereotype that foreigners don't know how to separate garbage properly, but because each municipality in Japan creates its own regulations for garbage separation, even Japanese newly arrived in a particular community may be identified as outsiders through garbage separation mistakes. On the other hand, by properly sorting their garbage, residents can communicate that they understand and respect the rules of their community. In this way, household waste disposal becomes emblematic of a particularly gendered form of community belonging.

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