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# Governance, Arson, and Firefighting in Edo, 1600–1868

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The city of Edo, whose name was changed to Tokyo in 1868, presents a particularly fruitful site for examining the way in which large preindustrial settlements managed the problem of uncontrolled fire. Edo was the capital city of the Tokugawa shogunate, the dynastic military government that ruled Japan from 1600 until the Meiji Restoration of 1868. Home to a rotating population of samurai from the military clans of over 250 *daimyo* who were Tokugawa vassals, plus a supporting population of commoners, it had become the most populous city in the world by 1700. The population remained relatively stable at approximately one million inhabitants for a century and a half thereafter. Since almost all construction in this densely populated metropolis was of wood and the technology of fire extinguishing was primitive, large fires were routine. This condition of extreme flammability had political and social as well as economic ramifications.

Although small fires, both accidental and intentional, were a daily occurrence, fires that destroyed multiple buildings in Edo were a seasonal phenomenon. Data on the largest fires of the era indicate that approximately two-thirds occurred during the four winter months of November through February, when the weather was driest and strong winds often blew from the north and northwest





toward the bay. The summer months, by contrast, were wet enough that fires seldom spread. The same statistics suggest that a conflagration was nearly twenty times as likely to develop in January as in June.[1]

Yet the city's endemic fires cannot be blamed on an unusually hazardous natural environment alone. Other Japanese cities had similar conditions. All were wood built and prone to conflagrations, yet none suffered as frequently or on as large a scale as Edo. According to Yoshihara Ken'ichirō's review of surviving documents, 1,798 fires were recorded in Edo during the 268 years of Tokugawa rule.[2] Murata Michihito has counted 184 fires in Japan's second city, Osaka, during the same period. Since the Osaka population fluctuated between about 350,000 and 400,000 throughout the period, this means that there were roughly four or five times as many recorded fires per capita in Edo as in Osaka.[3] Edo's exceptional number of fires derived chiefly from the nature of construction in the city. Central Edo was denser than elsewhere and construction cheaper. Whereas roofs in Osaka were uniformly tiled and plaster was widely used on exterior walls, in Edo the majority of houses were wood shingled and clad only in flimsy clapboards. Despite occasional attempts to promote sturdier construction, residents both elite and common devoted more energy to preventing fires and to escaping them when they raged than to building a city of more fire-resistant materials.

Edo appears at first the ideal case of the "Asian" fire regime described by Lionel Frost in his insightful overview, "Coping in Their Own Way: Asian Cities and the Problem of Fire." Frost observes the space-intensive construction of the walking city, the choice of cheap building materials and sparse furnishings, and the mitigation of economic loss by rapid renewal, all of which were features of Edo. However, Frost's model only takes us so far toward understanding Edo's fire regime. To explain why the cities he discusses retained these traits, Frost describes a "prisoner's dilemma" scenario in which individual citizens chose not to build in fireproof materials because they had no guarantee that their neighbors would not "defect" by refusing to make similar investments. He describes this inertia additionally as a problem of "path dependency."[4] This understanding is inadequate to explain a fire regime as evolved and integral to the life of the city as that of Edo. One must look to a confluence of other social and political factors to explain why Edo remained so flammable.

## Edo-Tokyo Fires as a Problem of Urban Governance

The explicit principle at the foundation of the Tokugawa government's approach to fire control derived from the fact that Edo was a castle town, built in effect as a military encampment. Thus, before all else, the authorities sought to protect the castle itself and to maintain guard against armed threat. Fires in the commoners' districts of the city, meanwhile, were treated predominantly as a problem of social control, and, as with other matters, governed through moral exhortation and threat of punishment. Edicts were published several times annually ordering vigilance against fires and making not only fire prevention but active participation in firefighting obligatory for all households. Each block (*chō*) was required to have a guardhouse with a watchtower, and guards, accompanied by a local concierge (*yanushi*), were expected to make rounds nightly. In 1742, Shogun Yoshimune decreed that accidentally starting a fire that burned more than ten *koma* (18 meters) of adjacent buildings would result in confinement of up to thirty days. To encourage mutual surveillance, punishment was meted out to the landlord, the concierge, a neighborhood official responsible for the fire watch (*gachi gyōji*), and members of the five-man group that made up the smallest unit of urban administration. If the fire occurred on the day of a shogunal audience (*onaribi*), the concierge could be placed in chains for thirty days.[5] A century and countless fires later, a new edict made it a crime of the same degree to allow a fire to spread by failing to extinguish flying embers from a conflagration elsewhere.[6] It is difficult to imagine how such a rule could have been enforced. Regardless of its effectiveness, laws like this underscored the shogunate's position that fire control was a communal responsibility.

Edo authorities also sought to limit the uncontrolled spread of fires by regulating the places and times at which fire could be used. Edicts were issued forbidding candles and other sources of open flame on the second floors of buildings, requiring communal bathhouses to shut down the stoves they used to heat the water after the sixth hour in the evening (the private households of commoners were forbidden to have their own baths because of fire risk), and ordering food stalls using fire to shut down at the same hour and not to move locations.[7] Movement generally was restricted at times of the greatest fire risk. On particularly windy days, residents were ordered to stay at home, shutter their shops, and ward against fire.[8] A strong wind was enough to precipitate this state of siege because most of the backstreet houses were roofed with wood shingles, which not only burned quickly but were easily borne aloft in the flames and carried still burning to rooftops blocks away. Vigilance on windy days was thus among the more commonsensical of shogunal exhortations. American visitor Edward Morse found Tokyoites still battening down on windy days in the late 1870s, a decade after the change of government. "For the last few days the wind has blown a furious gale," he recorded in his diary, "and everywhere on the street are seen preparations in anticipation of a large conflagration.



Few goods are displayed; godowns [storehouses] are partially sealed with mud."[9] Explicitly mandating such practices was part of the Tokugawa approach to governance, which focused on guiding the behavior of persons and households rather than on confronting the larger problem of protecting the city as a whole.

Arson provided a sure rationale to treat fire as a human rather than an environmental problem. Poor and marginal Edoites had a variety of reasons to commit arson, making it a likely cause for many of the city's fires. It was a way to erase debts, one could expect to receive alms afterward, and there would be work opportunities in reconstruction. Between 40 and 50 percent of the hundreds of fires in Tokyo recorded by the Home Ministry under the new Meiji government in the 1870s were reportedly caused by arson or suspected to have been caused by arson.[10] As long as conflagrations were common, however, the authorities had a clear incentive to blame them on arson. By capturing, torturing, extracting confessions from, and executing suspected arsonists, the Tokugawa regime made what otherwise appeared an intractable problem of urban management into a disciplinary matter and, at the same time, provided evidence of its own disciplinary power to the populace. During the most violent crackdown on arson in 1722 and 1723, authorities burned 101 accused arsonists at the stake, graphically fitting the punishment to the crime. Nearly half of this number were outcastes (*hinin*) or drifters (*mushuku*).[11] This form of arbitrary justice not only kept the status hierarchy in place but absorbed fire into the social order as well, rendering it an isolated violent event to be suppressed with violence rather than a chronic source of administrative crisis.

If the social control of uncontrolled fire induced displays of state violence, great fires also provided opportunities for displays of transcendent and benevolent rule, as Enami Shigeyuki and Mitsuhashi Toshiaki have argued.[12] This was true in the first instance because the shogunate followed major fires with measures such as street widening and construction of firebreaks, which involved the reparceling of land and the resettlement of large numbers of people, reminding the entire urban populace, military, clerical, and commoner alike, that they inhabited Edo at the grace of the Tokugawa shogun. These moves were accompanied by demonstrations of shogunal largesse in the form of grants for reconstruction, emergency shelters for the displaced, and alms. Fires occasioned a virtual potlatch of gifts and loans in all directions. Cash was granted to affected samurai houses according to their estate size (*kokudaka*) and to commoner houses according to their frontage. The tenement-dwelling majority received rice or gruel.[13]

As Katō Takashi has noted, the "veneer of administration" that the shogunate was able to maintain over the city was "thin." Responsibilities were delegated through a commoner hierarchy from hereditary town elders ultimately down to the five-family groups. Like policing and poor relief, fire protection was never conceived as a public service that the government was obligated to provide.[14] Wherever possible, actual management was placed in the hands of commoners. Even at the city prison, day-to-day affairs were put under the charge of bosses appointed from among the prisoners themselves. In place of direct administration, the shogunate claimed the role of moral paragon with the power over life and death, displaying munificence on one hand and rapid and absolute punishment of miscreants on the other—what Daniel Botsman has called "bloody benevolence."[15]

Fires received more attention than any other municipal problem. Yet, as much as the authorities sought to regulate for their prevention and control, large conflagrations were at the same time unquestionably *useful* to the shogunate's style of rule. A nostalgic history of Edo firefighting published in 1899, when the last remnants of the old regime were disappearing, opened with the observation that under the shogunate, the city approached fires on a war footing.[16] By the same token, as a military regime ruling in peacetime, the shogunate used the pattern of crisis and response engendered by large conflagrations as a way to reaffirm its hegemony.

## Arson and the Regime

The shogunal officials who oversaw commoner neighborhoods had the task of investigating suspicious fires and apprehending suspected arsonists. Once a case was reported or a suspect apprehended, samurai associated either with the offices of the two town magistrates (*machi bugyō*) or with independent "robbery and arson inspectors" (*hitsuke tōzoku aratame*) conducted investigations, interrogated suspects and witnesses, and imposed punishments.

By the early eighteenth century, the shogunate regularly appointed two robbery and arson inspectors. An inspector was given an office near the castle with a staff of five to ten constables (*yoriki*) and thirty to fifty patrolmen (*dōshin*). Inspectors accompanied their subordinates on horseback to make formal arrests, presided over trials, and submitted inquiries to the senior councillor (*rōjū*) before reaching verdicts on criminal cases.[17] These two small offices with roughly one hundred men between them could not possibly have kept the whole city under effective surveillance—one reason that the shogunate relied so heavily on the commoners to police themselves.



The surviving records of these offices are communications between the inspectors and the shogunate's senior governing council. After an arson case had been thoroughly investigated, the inspector would submit a report proposing a verdict and punishment and request a final opinion. In some cases, particularly those where the inspector had proposed a death penalty, the senior councillor would forward the case to the high shogunal court called the Hyōjōsho.

Although the most respected body of legal guidelines throughout the latter half of the Tokugawa period, Shogun Yoshimune's *Kujikata osadamegaki* (compiled 1742), stipulated burning at the stake for all crimes of arson, surviving case records from this period reveal that shogunal officials frequently imposed lesser punishments, ranging from banishment to house arrest to a firm scolding in the inspector's office. The burning at the stake of alleged arsonists in 1722–23 marks the zenith of the shogunate's harsh first century of rule. Records of verdicts from the latter half of the seventeenth century include over fifty cases of arsonists, roughly 85 percent of whom were burned at the stake.[18] *Oshioki reiruishū* (Catalog of Punishments), a compilation of high-court cases for the period from the 1790s to the 1830s, includes fourteen cases of arson, half of which resulted in burning at the stake.[19] *Keirei bassui* (A Selection of Legal Judgments), a compilation of case reports sent by the inspectors and the verdicts of senior councillors covering a brief period between the 1780s and 1804, contains thirty-four cases related to arson. Unlike the high-court cases, cases in this compilation represent more of a cross-section of typical crimes handled by standard procedure. Arsonists were sentenced to be burned at the stake in only two of these cases. Two more were beheaded. Others received lesser sentences.[20] These judgments suggest that while Edo's penal system became more flexible in the eighteenth century, senior officials showed no hesitation to apply the harshest punishments to arsonists whose actions they deemed particularly egregious. For the arsonist or would-be arsonist, the frightening prospect thus always loomed of receiving the officially prescribed sentence and being burned at the stake, but confessing might also bring recognition of mitigating circumstances.

Judges in the eighteenth century came to place greater weight on the mental condition and moral character of the accused. This concern dictated thorough investigation of life circumstances and personal history.[21] Suspects deemed mentally deficient tended to receive more lenient punishments. Conversely, judges viewed the crime as more grave if they judged the arsonist to have acted in a "calculating" or "cunning" (*takumi naru*) manner. A brief description of three cases will offer some idea of the way shogunal officials took into account the convicted arsonist's mental condition and the social context of the crime.

The first case in the *Keirei bassui* collection describes a Buddhist temple acolyte named Ryūkō who is reported to have "started a fire on an aimless whim and burned the temple down" in 1795. The inspectors found Ryūkō to be a "virtually deranged simpleton" and asked their superiors if he might be turned over to his master at the temple to be placed in confinement. After further investigation, a reply came from Senior Councillor Matsudaira Nobuakira finding that the accused had "gone temporarily insane" and afterward "had no idea what he had done." Ryūkō was placed in the custody of relatives.

Another report in the compilation, submitted by Inspector Okabe Naiki to Senior Councillor Ōta Sukeyoshi in 1800, tells the story of Daisuke, a commoner living in a tenement, who had tossed burning cotton wool wrapped in scrap paper on a trash pile next to the outhouse used by the building's residents.[22] The report states that Daisuke had simply acted on an impulse, and that he did not have any other motives in setting the fire. During the three months it took the senior councillor to issue his verdict after receiving Inspector Okabe's report, residents from the suspect's neighborhood became involved in the case. After summarizing the details of the crime, Ōta wrote, "Although throwing a burning object on the trash pile was reprehensible, neighborhood officials and tenants living in the same building made a petition on the grounds that Daisuke is generally unwell." Even though it would be difficult to characterize the accused as "deranged," Ōta wrote, he gave the overall "impression of lacking intelligence." Under these circumstances, and taking into consideration the fact that Daisuke had not set the fire for any "cunning purpose" (*takumi sōrō gi*), Ōta ruled that the boy should be banished rather than executed. The petition filed on his behalf and the fact that he had reportedly not set the fire with devious intent earned Daisuke a measure of clemency, even though he had unquestionably attempted arson and may ordinarily have been of sound mind.

A case submitted by Inspector Ikeda Masajirō to Senior Councillor Toda Ujinori in 1798 deals with a man presumably of samurai status named Nakagawa Shitomi, who had been employed as a retainer in a warrior household.[23] According to the case record, Nakagawa had been making advances to one of the female servants in the house in whom another servant was also interested. Hoping to prompt his master to fire his rival, Nakagawa set two fires and accused him. Toda's verdict indicated that under interrogation Nakagawa had claimed he never meant to burn his master's house down and thus had put both fires out himself. Nevertheless, he had spread rumors that the fires were the work of the servant, which Toda characterized as "a calculated act" (*takumi naru itashikata*). Toda's verdict recognized the arsonist's extinguishing the fires himself as a mitigating circumstance, sentencing him to beheading rather than the more severe punishment of burning at the stake, but the "calculated" nature of his incendiarism was judged to justify execution.



These three cases show not only that there were exceptions to the draconian standards of written law, but that in spite of Edo's perennial vulnerability to fire, officials calibrated their response to arson cases on the basis of their assessment of criminals' morals rather than the damage they had caused or even intended. Of the three arsonists described, Nakagawa appears to have caused the least property damage, yet his punishment was by far the most severe. The criminal in this instance was guilty of having plotted against someone else. He was also a samurai guilty of a crime in his master's household, making his act an offense to the social order.

## The Threat of Arson and the Moral Economy

Property-holding elite townsmen were expected to give generously to their tenants and neighbors whenever they were burned out by fire and to pay the commoner fire companies after the event. Arsonists could take advantage of this moral economy because they were notoriously difficult to catch. The vast majority of backstreet tenants were victims of fire and not arsonists, and the aftermath of a fire was the occasion when they needed assistance most. Property holders recognized both protection against fire and poor relief as communal responsibilities in a local society where they possessed the privileges and the greater burdens of elite status. Regardless of whether it was deliberately set, therefore, a large fire was followed by demonstrations of elite largesse that were a boon to the poor and reaffirmed the status hierarchy.

The actual motives of arsonists, of course, varied widely. Accounts in the *Yomiuri* newspaper, which began publication in 1874, six years after the Meiji Restoration, offer a glimpse of arson in everyday context, before cases arrived in the courts. Most of the 584 arson attempts reported in the *Yomiuri* during its first decade of publication were caught by someone and the fire extinguished before large-scale damage had been done. This provides a significant corrective to the image of flammability one readily derives from studies that deal with only the city's large conflagrations. On the one hand, any small fire, particularly one ignited during the dry and windy winter months, threatened to rage out of control and destroy hundreds or even thousands of houses. On the other hand, the tightly woven networks of mutual aid and mutual surveillance that characterized the city's downtown neighborhoods assured that nothing out of the ordinary escaped notice for long.

Since a fire in one household could quickly engulf the entire neighborhood, the mere threat of arson was enough to affect the behavior of all householders. This made such threats an effective form of blackmail. The Tokugawa legal records and the Meiji-period newspapers contain frequent references to written threats called "fire notices" (*hifuda* or *kasatsu*) posted on house doors or the entry gates to blocks. The aim was to force the ostracism of one's enemy. Community safety readily took precedence over the rights of an individual resident. One such threat, written in formal language and posted on the gate of a landlord's agent in the shopkeeping neighborhood of Shitaya Sukiya-chō, was reprinted in an article in the *Yomiuri* in August 1875: "Whereas Takamatsu Minosuke, who is under your charge here, is an avaricious and corrupt man, in the near future we will burn this place down; therefore for your information we apprise you of this. Thank you." The newspaper urged readers in Sukiya-chō to take all precautions. Five days later, a letter was printed in the *Yomiuri* from a resident of the block reporting that someone had indeed set fire to the roof of the house in question but that thanks to the newspaper's warning the neighbors had been on their guard and were able to extinguish the fire.[24]

It is unclear what beneficial role the newspaper had actually played, however, in printing a threat already issued publicly—and thereby expanding its audience from the immediate neighborhood to the entire city. The new medium of the newspaper may in fact have been the blackmailer's dream come true, since it guaranteed maximum publicity. Although it is possible that Tokyo residents came to practice greater vigilance at the urging of the newspapers and thus limited fire damage, what the authors of posted threats sought more than physical destruction was to get their way by involving neighbors in their grievances. The *Yomiuri* also reported more than once the nuisance caused by having a recipient of such threats in one's midst.

## Firefighting Practices and Technologies

Following the destruction of the city in the huge Meireki fire of 1657, the shogunate established the first citywide firefighting organization: the *jōbikeshi*, or "regular firemen," overseen by ten direct Tokugawa vassals. Each *jōbikeshi* company (*kumi*) was assigned to a different section of the city, and their firehouses were strategically located at ten points around Edo Castle. Until the mid-eighteenth century, these "regular firemen," together with the *daimyo*-sponsored squads that were assigned to protect key locations such as Tokugawa clan temples and granaries, formed the core of the city's firefighting force.



However, dozens of independent companies existed as well. The lack of a unified institutional structure led to conflicts among firefighters in the second half of the eighteenth century.

Fire companies made up of commoner townsmen emerged in the latter half of the seventeenth century and were given formal status under Shogun Yoshimune in 1718. The city map was divided into precincts, and each of forty-seven town fire companies was assigned responsibility for a designated precinct. Companies were identified by a single character of the Japanese syllabary and a decorative standard (*matoi*), which the bearer carried up onto a roof as close as possible to the fire in order to establish the company's precedence on the scene.[25] Sixteen companies were added subsequently for new districts east of the Sumida River. In theory, the activities of these companies were restricted to property owned by commoners, and each was to work within a limited perimeter, but in practice this was impossible, since commoner and samurai lots were interwoven and fires recognized no administrative boundaries. In the latter half of the eighteenth century, the town companies competed with the samurai-led companies. By the beginning of the nineteenth century, they had become the city's dominant firefighting force.[26] A symbolic watershed came when town companies were first called in to help extinguish embers after a fire at Edo Castle in 1747.[27]

The shift toward dominance by the town companies was abetted by the shogunate, since giving greater responsibility to the commoners themselves reduced the financial burden on the regime. It also appears to have been a natural product of the town brigade's greater success in fighting fires. Drawn from the city's guild of construction workers and roofers, the town brigade firemen (known as *tobi*, meaning "hookmen," after their fire hooks) were more habituated than samurai to dangerous work in high places.

Under the direction of construction foremen, the companies maintained a hierarchy of six ranks. All members were paid a small retainer from funds collected among the property holders of their districts. Since this was not a living wage, they continued to do odd-job construction work. Many depended on the patronage of particular wealthy merchant houses. They also received gifts of *sake* and cash from property owners whose buildings had been protected. After a fire, surviving structures were left festooned with long poles bearing the tags of companies that had participated in the fight, in anticipation of such gifts and offers of work in the reconstruction.[28] By the late eighteenth century, an organic relationship had thus developed between the activities of construction and of firefighting, as the skills from one were imported to the other. Not merely laborers moonlighting as firefighters, the hookmen were the creative demons of the temporary city. Unlike carpenters, for whom precision was more important than speed, hookmen were masters of the slapdash, expert in quickly putting up, propping up, and pulling down post-and-lintel and lashed structures, roofing and de-roofing, creating temporary shelter and dismantling it.

The city's reliance on these men in fires had a number of undesirable social ramifications. To begin with, they were difficult for the authorities to control. Turf battles occurred frequently, sometimes at the sites of fires, and a few resulted in deaths. The shogunate enjoined repeatedly against fighting, but the injunctions had little effect. Dependent on the town companies' firefighting skill, city authorities could not afford to treat them harshly. In the case of at least one fight between a town company and a samurai-led company, the magistrate even showed greater leniency toward the townsmen.[29] The second problem was that firemen tended to protect the property of their patrons first. Even among their patrons, the firemen's efforts went to the highest bidder. A newspaper account of a fire in the Kanda district in 1881 describes them hustling for cash in the thick of a fire. According to the newspaper, as flames closed in on firefighters manning the roof of the Daimaru dry goods shop, the head clerk held up two fingers and called out to them, promising two thousand gold pieces for their effort. The offer was first mistaken for two hundred, and few men responded. When they discovered it was two thousand, however, they gathered their comrades, redoubled their efforts, and saved the building.[30]

If firefighters could save a particular structure for a price, they could also choose to ignore property out of spite or even use the chaos of an uncontrolled fire to take revenge on enemies by damaging or demolishing buildings. The shogunate issued edicts warning against this too. In the early nineteenth century, there were reports that firefighters encouraged fires to spread (the term used is *yobihi*, literally meaning "drawing" or "calling a fire"), which would in essence have been arson, but in the confusion of a large fire it would often have been impossible to establish culpability.[31]

At bottom, hiring construction workers to fight fires created a fundamental conflict of interest. One might even expect to find them commonly among accused arsonists. This is not borne out by the limited body of cases preserved in Tokugawa documents, however. As in many cities, the firemen's derring-do made them folk heroes. Although many came from the lower classes and their unruly behavior was infamous, their bosses were respected figures backed by the patronage of the wealthiest merchants. Strong patron-client relationships extended down from these bosses to the men in their companies. Construction workers who bore the hooked poles used in demolition and firefighting were



the most highly paid members of the city's large pool of day laborers. Professional pride and patronage seems generally to have kept firemen from being the ones to set the fires that were their livelihood.[32] Yet in a situation where complete suppression was often impossible and the firemen who were most skilled at limiting damage had great autonomy at the site of the fire, they had powerful incentives to be selective in their firefighting.

In a large fire, the work of the town companies consisted mainly of stripping or tearing down flammable buildings along the flanks of the fire, leaving it to burn unchecked downwind until it reached water or fields. As a result, the area burned by most Edo fires was long and narrow.[33] The width of the path they cleared naturally varied, but judging from the fact that companies from two blocks (*chō*) on either side of the fire were required by law to mobilize, this may mark an outer limit of anticipated lateral spread.[34] Historians usually refer to the technique as "demolition firefighting." It was not peculiar to Edo. London brigades in the seventeenth century, for example, demolished buildings in the path of fires with explosives. The technique developed by the Edo townsman firefighters was subtler, however, and distinct from firefighting practice in other cities in Japan as well as from the London firefighters' approach. Suzuki Jun reports that the Osaka magistrate noted the superiority of Edo firefighting techniques to the Osaka practice, in which buildings were pulled down. Taking a term from Meiji-period accounts, Suzuki proposes that the Edo technique be called the "dry method" rather than "demolition firefighting."[35]

The difference lay in the fact that the Edo town companies worked from the roof down on burning or threatened structures, stripping away everything removable to deprive the fire of fuel and encourage the heat to rise directly skyward rather than spread laterally to other buildings. This helped extinguish fires caught in their early stages and saved the frames and walls of sturdier structures in larger fires. Demolition was nevertheless a basic part of the firefighters' arsenal of techniques. Three types of construction in the city called for three distinct firefighting strategies: the cheapest structures, usually in the backstreets, built entirely of wood and shingled in wood, which were considered expendable and referred to as "burnable buildings" (*yakiya*); sturdier structures built of wood with tile roofs and clay and plaster exterior walls on at least the first story, known as "coated buildings" (*nuriya*); and the massive storehouses and shophouses called *dozō* (earthen storehouses), wood-framed but built with walls of clay and plaster as thick as sixty centimeters. Buildings in the first category were usually pulled down immediately or left to burn, buildings in the second were the main focus of the town companies' "dry method," and buildings in the third category, fireproof in most circumstances and anyway impossible to strip, were left intact, their doors and windows having been sealed shut by residents or professional plasterers in advance of the fire.

It should be noted that the buildings of the ruling class—including Edo Castle itself, the urban estates of the military clans, and the Buddhist temples—were constructed of the same materials as commoners' housing, equally flammable, and approached by town companies with the same methods on the occasions they were called in to fight fires in these precincts. They were not always called in, however. Fires that began within the estates of the military clans, which enjoyed spacious gardens to buffer them from the rest of the city, were treated as private affairs requiring no outside intervention provided they did not spread beyond a certain size (variously determined by several shogunal edicts) and their main gates did not burn. If either of these things did occur, however, Tokugawa regulations called for forfeiture of the estate. Anxious to avoid this punishment, the clans were known to lock out town companies and make accidental fires appear from outside to be intentional bonfires.[36] As commoners came to dominate firefighting in the late eighteenth century, the samurai fire companies concentrated on protecting their own compounds along with structures connected to the Tokugawa regime. One feature of their defense was to stand on the rooftops of these buildings and wave away flying embers with enormous hand fans. These fans became a mark of firefighters in the samurai companies.[37]

Japanese craftsmen learned to construct rudimentary fire engines (pumps) from the Dutch in Nagasaki in 1754. Ten years later, the shogunate distributed fifty-five of them among the commoner districts in the capital. These were the first pieces of firefighting equipment that the authorities had distributed. They were indeed primitive, consisting of a wooden tank suspended from a pole to be carried by two men and a bamboo nozzle without a flexible hose. Buckets were used to replenish water in the tank. These engines were sufficient to play a thin stream on the second-story roofs where firemen worked, but not to extinguish a blaze. Although a patent was sought in 1823 for a water-raising device that could deliver a steady flow, "with the power of thirty men" from a nearby water source, no significant modifications to the engines occurred in the century prior to the Meiji Restoration.[38]

This failure must be understood in social as well as technological terms. An official investigation in 1822 found many of the companies' engines in disrepair and unusable. The commoner neighborhoods responsible for their maintenance claimed that the cost of upkeep was prohibitive. Yet if the engines had been recognized as effective tools of fire suppression, such complaints would have made little sense, since the cost of reconstructing wooden buildings surely



exceeded the cost of maintaining a wooden pump. The real expense that burdened commoner property holders was the maintenance of the companies themselves. Suggesting the commoners' own perception of the priorities among firefighting techniques and technologies, pump men in the companies earned only half the wages of a standard-bearer, who did no extinguishing at all.[39]

Although the investment in fire extinguishing remained limited through the Tokugawa period, the shogunate's distribution of pumps and apparently vain effort to see them properly maintained reveals that the regime placed more faith than commoners did in water-based extinguishing. This may be seen as part of a more general tendency in firefighting toward a wet approach among the elite and a dry one among commoners, evidenced also in differences between the firefighting approaches of samurai and town companies. One celebrated story tells of samurai firemen of the wealthy Kaga clan running a bucket relay over six kilometers from Hongō to Shiba in order to douse a fire at the Tokugawa ancestral temple there with water drawn from their own estate.[40] In contrast, an account of a fire in 1843 that threatened the firehouse of one of the shogunate's own regular fire companies (*jōbikeshi*) describes town companies coming to the rescue with their "special techniques" and succeeding in limiting the damage of the blaze when "not a drop of water" was available.[41] The wet-elite/dry-commoner distinction extended to dress. The samurai-led companies stripped down to loincloths to fight fires, while the town companies did the opposite, donning heavy cotton jackets, which they doused in water. The samurai companies presumably stripped because wet clothes would only hamper their efforts to douse the flames, whereas the town companies dressed and doused themselves to protect their bodies while standing in the midst of the fire and stripping the buildings to control the direction of the flames rather than dousing them.

Using water was, however, the inferior technique given the building conditions and technologies of the time. Nor should we think of dousing as the more "natural" way to extinguish a fire, as some modern authors have implied in writing about Edo's dry, partial-demolition approach. On the contrary, directing large quantities of water toward the seat of a fire expends vast amounts of energy—in this instance, all human energy—without contributing to the more fundamental solution of depriving the fire of fuel. As the bucket relay across the city suggests, the preference for wet extinguishing among samurai firefighters was in part a show of elite profligacy. The relative dominance of dry firefighting in Edo demonstrates that although the fire engine may seem the most obvious and essential tool in any city's management of fire, it must be understood as part of a technological ensemble, together with brick and other fire-resistant architecture and straight, wide streets for the rapid transport of large machines. Edo operated with a different ensemble.

## The Logic of Edo's Fire Regime

Frost asks why residents of wood-built "Asian" or preindustrial cities did not rebuild in fireproof materials and presents a game theory model to answer, in essence, "because they couldn't count on others to do so too." Each citizen in this multiparty prisoner's dilemma scenario avoids investing in the fixed capital of fire-resistant buildings that would be for the good of all because of the fear that his neighbor will fail to fireproof. In the absence of either a strong public authority or a strong community will, it is unprofitable to invest, and the city continues to burn.

Yet Edo was ruled by a powerful authoritarian government, and Edo commoner neighborhoods were arguably stronger communities than anything that can be found in the modern world. The proper question to ask, therefore, is not why Edoites, as individual rational actors, failed to fireproof, but what broader social and political factors caused the shogunate and the city's residents to persist in a system they might have done more to alter. For several reasons, Edo's response to fire was shaped by more than simply the failure of citizens to mobilize themselves to protect their assets.

To begin with, the Tokugawa shogunate took numerous measures to limit the occurrence of fires, but it never did so with the aim of guaranteeing an environment for the safe accumulation of capital. Its political objectives lay elsewhere. The capital city was a space for the display of power, through military ceremony and through direct exercise of absolute rule. Redistricting, reapportioning of lots, and generous distribution of aid after large conflagrations were among the tools of this politics of display, making the fires themselves useful even though the disturbance of order and the budget strain they caused were undesirable. During the eighteenth century, the regime developed a more nuanced and negotiable position both juridically and administratively in relation to the commoner population.[42] This was not an accommodation made to promote the interests of the bourgeoisie, however, and the physical fabric of the bourgeois city remained expendable in the eyes of the city's military rulers.

Bourgeois property holders did have a clear interest in protecting buildings and their contents, and many took measures, particularly by coating walls with clay and plaster and by tiling roofs. But wholesale fireproofing of even the most prosperous districts never occurred for a combination of social and economic



reasons. Not only was fireproofing expensive, but the cost to fireproof would have fallen heaviest on those least able to afford it, since the most flammable buildings were the backstreet tenements rented by the poor, usually from petty local property managers of modest means themselves. In a society where both rulers and local elites were supposed to be moral exemplars, wealthy merchants went to considerable lengths to avoid raising rents and evicting the poor.[43] This moral economy rather than a lack of mutual trust hindered construction of housing in more durable and expensive materials. A certain level of flammability was viewed as inevitable, to be tolerated together with the city's large floating population of poor tenants—who were also an indispensible source of labor. The flammable environment and the high level of mutual dependence within commoner neighborhoods were intertwined social phenomena, since vigilant neighbors were the best guarantee against fire, while the risk of a rapidly spreading fire required neighborly vigilance.

This condition was viable economically too because of the capital's position within networks for exchange of goods and movement of people involving the rest of Japan. As a military-political capital where the families of all the country's domainal lords were required to dwell, Edo was founded on the consumption and display of wealth rather than its production. The large shops, which dealt primarily in luxury silks for *kimono*, had their bases in Osaka, Kyoto, and other provincial centers that were finishing sites for materials brought from throughout the country. These shops kept recent shipments in storehouses along waterways at a safe distance from central Edo. Sustained by the carefully husbanded forest resources of central Honshū, lumber for buildings flowed continually into the city to be consumed as rapidly as textiles.[44] Edo thus played a key role in an integrated national commercial economy, but that role did not depend on its being the site of large investments in fixed capital. When Japan was compelled to reenter the global trade system under the terms of the imperial powers in the 1860s, the modern state redirected itself toward success in that arena and diplomatic display for the Western powers. In this new context, durable architecture for the first time became an important asset for the capital.[45]

Nor would it be correct to view the city as technologically stagnant until the modern state introduced European fire engines and pressurized water at the close of the nineteenth century. If we include building and transport technology and the human technology of fire company organization and firefighting technique within our purview, there was considerable development across the Tokugawa period. Much of that development, however, was toward a more efficiently constructed and dismantled city rather than toward a fireproof one. There are indications that the institution of the townsman brigade in the early eighteenth century did result in a decrease in large conflagrations.[46] Although several conflagrations caused massive loss of life, it seems that none after the great fire of 1657 approached it in casualties, and the great majority of large fires resulted in no deaths at all. Frequent acts of arson continued to reveal the stresses in the social fabric, but Edoites seem to have gotten better at escaping personal harm from conflagrations, and their firefighters unquestionably got better at containing and directing them—one might almost say "orchestrating" them—if not extinguishing them.

## NOTES

1. Data of Yamakawa Kenjirō, cited in Kuroki Takashi, *Edo no kaji* (Tokyo: Dōseisha, 1999), 14–15.

2. Yoshihara Ken'ichirō, cited in Kuroki, *Edo no kaji*, 3.

3. Murata Michihito, "Kinsei Ōsaka saigai nenpyō," *Ōsaka no rekishi* 27 (Osaka, 1989): 88–105. Population figures in *Shinshū Ōsaka shishi dai 4 kan*, ed. Shinshū Ōsaka shishi henshū iinkai (Osaka: Ōsakashi, 1990), 199.

4. Lionel Frost, "Coping in Their Own Way: Asian Cities and the Problem of Fires," *Urban History* 24, no. 1 (1997): 14–16.

5. Kuroki, *Edo no kaji*, 130–31.

6. Edict issued following the great fire of 1829, quoted in Yoshihara Ken'ichirō, "Edo saigai nenpyō kaisetsu," in *Edo chōnin no kenkyū 5*, ed. Nishiyama Matsunosuke (Tokyo: Yoshikawa Kōbunkan, 1978), 447.

7. Kuroki, *Edo no kaji*, 137–38.

8. Ibid., 132. Kuroki paraphrases an edict issued in 1830, but this was not the first of its kind.

9. Edward Sylvester Morse, *Japan Day by Day*, 2 vols. (Boston: Houghton Mifflin, 1917), 2:398.

10. Charts in Makihara Norio, *Kyakubun to kokumin no aida: Kindai minshū no seiji ishiki* (Tokyo: Yoshikawa Kōbunkan, 1998), 24–25.

11. Ibid., 28.

12. Enami Shigeyuki and Mitsuhashi Toshiaki, *Saiminkutsu to hakurankai: Kindaisei no keifugaku, kūkan chikaku hen* (Tokyo: JICC Shuppankyoku, 1989), 44–45.

13. Kuroki, *Edo no kaji*, 174–77.

14. Katō Takashi, "Governing Edo," in *Edo and Paris: Urban Life and the State in Early Modern Era*, ed. James L. McClain, John M. Merriman, and Ugawa Kaoru (Ithaca, NY: Cornell University Press, 1994), 53, 58.

15. Daniel V. Botsman, *Punishment and Power in the Making of Modern Japan* (Princeton, NJ: Princeton University Press, 2005), 41–58.

16. "Edo no hana," *Fūzoku gahō*, no. 179 (January 1899): 1.

17. See Minami Kazuo, "Hitsuke tōzoku aratame," in *Edo no machi bugyō* (Tokyo: Yoshikawa Kōbunkan, 2005).



18. *Oshioki saikyochō* (Book of Punishments and Verdicts), reprinted in *Kinsei hōsei shiryō sōsho*, ed. Ishii Ryōsuke, rev. ed. (Tokyo: Sōbunsha, 1959), 1:186–98.

19. Ishii Ryōsuke, ed., *Oshioki reiruishū* (Tokyo, 1971–73).

20. Harafuji Hiroshi, ed., *Hitsuke tōzoku aratame no kenkyū: Shiryōhen* (Tokyo: Sōbunsha, 1998). Citations for cases described in *Keirei bassui* refer to this text, abbreviated hereafter as *HTAK*.

21. For further examples, see Steven Wills, "Fires and Fights: Urban Conflagration, Governance, and Society in Edo-Tokyo, 1657–1890" (PhD diss., Columbia University, 2010), 32–88.

22. *HTAK*, 61, Case 7.

23. *HTAK*, 59, Case 2.

24. *Yomiuri shinbun*, no. 179 (August 20, 1875), 1; *Yomiuri shinbun*, no.183 (August 25, 1875), 2.

25. The spot closest to the fire was referred to as the *hana*, or flower.

26. On competition between companies, see Ikegami Akihiko, "Edo hikeshi seido no seiritsu to tenkai," in *Edo chōnin no kenkyū 5*, ed. Nishiyama Matsunosuke (Tokyo: Yoshikawa Kōbunkan, 1978), 91–169.

27. Kuroki, *Edo no kaji*, 92. For a social history of the town fire companies, see William Kelly, "Incendiary Actions: Fires and Firefighting in the Shogun's Capital and the People's City," in *Edo and Paris: Urban Life and the State in Early Modern Era*, ed. James L. McClain, John M. Merriman, and Ugawa Kaoru (Ithaca, NY: Cornell University Press, 1994), 310–31.

28. Morse, *Japan Day by Day*, 2:126, provides a sketch of "firemen hanging out the names of the engine companies who saved the building as it stands." The building in the sketch has been stripped of roof tiles and roofing boards, but its frame is intact.

29. Ikegami, "Edo hikeshi seido no seiritsu to tenkai," 145–47.

30. *Tōkyō nichinichi shinbun*, February 16, 1881, quoted in *Tōkyō shi shikō shigaihen 64*, ed. Tōkyōto (Tokyo: Tōkyōto, 1973), 662. On the modern transformation of the town fire brigade, see Suzuki Jun, *Machibikeshitachi no kindai: Tōkyō no shōbōshi* (Tokyo: Yoshikawa Kōbunkan, 1999).

31. Suzuki, *Machibikeshitachi no kindai*, 18. See also Takeuchi Makoto, "Festivals and Fights: The Law and the People of Edo," in *Edo and Paris: Urban Life and the State in Early Modern Era*, ed. James L. McClain, John M. Merriman, and Ugawa Kaoru (Ithaca, NY: Cornell University Press, 1994), 384–406.

32. On the status of the *tobi*, see Yoshida Nobuyuki, "Kyodai toshi ni okeru mibun to shokubun," in *Kinsei toshi shakai no mibun kōzō* (Tokyo: Tōkyō Daigaku Shuppankai, 1998), 283–308. For discussion of the only recorded case in which firemen were accused of setting a fire, see Wills, "Fires and Fights," 39–40, 72–73.

33. Ōta Hirotarō, "Edo no bōka taisaku," in *Nihon kenchiku no tokushitsu* (Tokyo: Iwanami Shoten, 1983), 317.

34. Yamamoto Sumiyoshi, *Edo no kaji to hikeshi* (Tokyo: Kawade Shobō Shinsha, 1993), 136. Yamamoto states that two blocks on either side of the fire, three blocks ahead of it, and three blocks behind it mobilized together with the block where the fire had broken out.

35. Suzuki, *Machibikeshitachi no kindai*, 34, 36.

36. Yamamoto, *Edo no kaji*, 225–26.

37. Suzuki, *Machibikeshitachi no kindai*, 28.

38. Yamamoto, *Edo no kaji*, 115–16.

39. Ibid., 119.

40. Suzuki, *Machibikeshitachi no kindai*, 27.

41. "Edo no hana," *Fūzoku gahō rinji zōkan*, no. 183 (February 20, 1899): 4–5.

42. See James L. McClain, "Power, Space and Popular Culture in Edo," in *Edo and Paris: Urban Life and the State in the Early Modern Era*, ed. James L. McClain, John M. Merriman, and Ugawa Kaoru (Ithaca, NY: Cornell University Press, 1994), 105–31.

43. Tenants were protected indirectly through the presence of the landlords' agents, or concierges, known as *yanushi*. See Morita Takako, *Kindai tochi seido to fudōsan keiei* (Tokyo: Hanawa Shobō, 2007).

44. On Tokugawa forestry, see Conrad Totman, *The Green Archipelago: Forestry in Preindustrial Japan* (Berkeley: University of California Press, 1989), and Conrad Totman, *The Lumber Industry in Early Modern Japan* (Honolulu: University of Hawaii Press, 1995).

45. This transformation receives further treatment in Jordan Sand, "Property in Two Fire Regimes: Edo-Tokyo in the Seventeenth through Nineteenth Centuries," in *Investing in Permanence: The Empires of Trade and the Built Environment*, ed. Carole Shammas (Leiden: Brill, forthcoming). See also Fujimori Terunobu, *Meiji no Tōkyō keikaku* (Tokyo: Iwanami Shoten, 1982).

46. See Nishida Yoshio, *Kōshō: Edo no kasai wa higai ga sukunakatta no ka* (Tokyo: Jūtaku Shinpōsha, 2006), 55–57.

3

# Taming Fire in Valparaíso, Chile, 1840s–1870s

SAMUEL J. MARTLAND

Valparaíso clings to the shore of central Chile's most usable natural harbor, poorly protected from storms at sea and hemmed in by bluffs on land. (See fig. 3.1.) After 1818, Chilean political independence and North Atlantic industrialization brought burgeoning seaborne trade to what had been a sleepy town. Early Chilean governments used their port's location on the route from Cape Horn northward to attract merchants who wanted a warehousing base for trade with the countries to the north, as well as with Chile itself. Such a base let merchants fill orders faster, avoid the more frequent political instability of some of Chile's neighbors, and enjoy the Chilean government's favorable attitude toward foreign business.[1]

Valparaíso grew from 5,317 in 1813 to 24,316 in 1835 and about 100,000 in 1875, forcing a nonindustrialized city and nation to come to grips with the urban effects of industrialization. That adaptation gave the city an image simultaneously cosmopolitan and Chilean. National strategic importance coexisted with international influences. The city's elite, whether Chileans, immigrants, or temporary expatriates, tended to share values of efficiency and order associated with commerce. Many developed a strong interest in what they called "local progress." Moreover, service to Valparaíso could be a form of service to Chile. The national