

Rats and Sewers: Urban Modernity Beyond the Human

Herre de Bondt and Rivke Jaffe

This brief essay discusses how urban modernity is constructed in a more-than-human fashion, through interactions and relations between humans, infrastructure and animals. We focus on the case of Amsterdam, drawing on historical studies and on research we conducted with present-day urban residents in the rat-affected neighborhoods of Slottermeer and Rivierenbuurt and with public health professionals in 2020.¹ We show how conceptualizations of urban modernity – and of what constitutes a bacteriologically and aesthetically clean city – are reconstituted over time, suggesting that aspirations to materialize such ideals are mediated by sewage infrastructure and rats. Historical scholarship on sanitary reform has emphasized the role of infrastructural works in reconfiguring human–nature relations in cities, as sewers helped to control and invisibilize wastewater flows. In addition, we suggest, sanitary infrastructure – sewers, but also new chemical systems – also helped shape ‘modern’ human–rat relations. In twenty-first-century Amsterdam, we see a new iteration of human–animal–infrastructure relations, as the governance of the brown rat (*Rattus norvegicus*) is framed in terms of coexistence rather than eradication, and an otherwise unwelcome species is being revalued for its work in keeping sewers clean.

¹ Conducted October–December 2020, this research involved forty interviews with residents of these neighborhoods as well as public health and housing professionals, and participant observation with pest management professionals during neighborhood-level inspections.

Constructing Sanitary Cities, Removing Rats

Urban scholars have argued that the construction of large-scale sewer systems, starting in the nineteenth century, was central in producing the modern city. Removing wastewater and specifically human feces not only represented a public health revolution; these infrastructural works were part of a broader movement of sanitary reform that involved new ideologies of cleanliness and proper modern conduct. The physical and technological transformations that these infrastructural works involved were accompanied by shifting cultural views on the appropriate relations between society and nature – the modern city was a locus of culture and technology, and the only sanctioned role of urban nature in this new context was to offer aesthetically pleasing space for leisure and contemplation (Gandy 2004).



*Sewer construction,
Amsterdam, 1910–12.*
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While such scholarship has highlighted the political materiality of infrastructure, it has engaged less with the role of nonhuman animals in the imagination and physical realization of the modern city. Yet their framing in terms of both nature and modernity shifted as well. As advances in medical science supplied new insights into the role of human and nonhuman disease vectors, certain animals emerged as “epidemic villains” (Lynteris 2020). Unsurprisingly, these villains included rats, which were identified as a vector for bubonic plague and more broadly came to be seen as unhygienic, aesthetically displeasing “trash animals” (Nagy and Johnson 2013) that clashed with urban modernity. This shift was not separate from infrastructural developments: the modern city’s sewage infrastructure not only removed human waste, it also helped urban rat populations disappear from view, affording them a new underground home that came to be seen as their natural habitat.



Collection of rodenticide
at Amsterdam's public
health service,
2 November 1959.
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Rat control operation in
Kattenburg, Amsterdam,
21 July 1965.
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In Amsterdam, a combination of cesspits and the city's famous canal system long served as the main infrastructure for wastewater removal. In the wake of three deadly cholera epidemics in the mid-nineteenth century, and as epidemiological insights became more widespread, so-called hygienists such as Samuel Senior Coronel and Samuel Sarphati agitated for sanitary reform. In 1906, the municipal authorities initiated the development of underground sewage infrastructure.

The capacity of the sewage system to make rats disappear underground, along with the wastewater, proved unsatisfactory. Attempts to control these 'epidemic villains' soon involved extending the sanitation infrastructure beyond the sewage system to include other, more mobile sociotechnical components, notably rodenticides. In the mid-twentieth century, Amsterdam's public health service organized a concerted campaign, providing citizens with rat poison and sending extermination teams into areas where rats ran rampant.

These various efforts can be seen as directly aligned with conceptions of the hygienist, sanitary city circulating globally at the time (Engelmann 2018). A modern city was one in which infrastructure was mobilized to remove both sewage and 'trash animals' from sight – or at least from the urban surface – through a sociotechnical system combining material, chemical and human elements. Like other modern cities, Amsterdam sought to distinguish and segregate good and bad forms of nature, establishing parks for leisure and zoos with exotic animals for contemplation, while removing human waste and waging a war on rats.

Living with Invisible Waste Workers

In contemporary Amsterdam, nineteenth and twentieth-century conceptualizations of rats as bad nature have begun to shift, as cities are increasingly understood as urban ecological formations co-constituted by humans and nonhumans. A new normative framing is slowly emerging, in which coexistence is slowly displacing extermination. In research we carried out in 2020, residents of rat-affected neighborhoods regularly described rats as an inherent part of urban life – arguing, for instance, that “the infestation of rats in Amsterdam is older than Amsterdam itself.” In these interviews, numerous residents situated rats within the city's larger ecosystem, expressing a recognition that rats' ecological role might benefit humans. “I can only assume that rats have a role in the ecosystem in one way or another, that they are useful in some way,” one resident concluded; “Maybe they eat something that inconveniences me, like mosquito larvae or baby mice.” Such statements clearly acknowledged Amsterdam's more-than-human urban ecology, recognizing and revaluing rats' interspecies entanglements.

Sewage infrastructure plays a crucial role in facilitating alternative readings of human–rat relationships. It continues to serve its modern function of rendering rats unseen – many of our interlocutors stressed that they preferred not to see rats – and sewage pipes afford this invisibility. However, the sewers are also a site where rats conduct waste work that is arguably invaluable to the modern city (Holmberg 2021). Rats' association with waste is not only negative: it affords them a framing as waste workers as they consume 'fatbergs' that form within sewage pipes. In the process, they prevent

the pipes from clogging and stop sewage from backing up. As one resident remarked, “[rats] undoubtedly do good work, they tidy up part of our mess.” At the same time, Amsterdam’s rats inadvertently disrupt urban infrastructure – they damage sewage pipes as they gnaw through them to gain access to food, shelter and transit routes. Meanwhile, their burrowing activities also cause sidewalks across the city to cave in. While most of the rats causing these forms of destruction remain invisible, those individuals that do venture aboveground may still elicit human reactions of disgust – especially when they emerge not in parks but in private homes, as happens on occasion in Amsterdam (de Graaff 2021). While such disruptions confirm longstanding perceptions of rats as problem animals, we see an emergent shift in which anthropocentric ideologies of cleanliness are complemented by an urban ecological perspective, in which interspecies coexistence and the value of nonhuman life become more prominent.



This reframing of rats as a normal and natural part of Amsterdam’s urban ecology, informed by rat–sewer entanglements, is reflected in the twenty-first-century governance of these rodents. Where previously extermination was the conventional response, the public health service has recently shifted towards a policy of integrated pest management (IPM). This change acknowledges that striving for population control, and particularly extermination, is ultimately unrealistic, and that rodenticide use carries broader ecological risks. Additionally, IPM emphasizes that pest management involves many other stakeholders than merely the public health service. Various actors – from shop owners to housing corporations – should attempt to manage Amsterdam’s rat

Elephant assisting with sewer construction in Amsterdam’s Artis Zoo, early twentieth century.
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population by minimizing rats' access to waste. The shift from control to management, a perspective emphasized in IPM's integrated approach, acknowledges the rats' agency to some extent. An internal municipal report outlining the shift to IPM described urban animals including rats as valuable, noting that they can serve as indicators of the quality of public space. The report stressed that "rats eat fat from sewage pipes and, in the process, help with the maintenance of the sewage system" (Gemeente Amsterdam 2018: 6, translation by authors). In its multi-stakeholder approach, then, Amsterdam's twenty-first-century sanitation policy also acknowledges and values the work done by nonhuman residents (cf. Barua 2019; Besky and Blanchette 2019; Zhang 2020).

Conclusion

In Amsterdam and beyond, the construction of urban modernity has relied on infrastructural projects that render unsanitary matter invisible, while confining urban nature to carefully planned locales. While analyses of sewage system construction highlighted the ability to remove waste from urban environments, we suggest that this focus on inanimate flows has overlooked how infrastructural development also reorganized relations between humans and sentient, nonhuman life. Sewers also afforded rats – an unpopular, biohazardous 'trash animal' – mobility, food and a place to hide from human eyes. This proved insufficient in balancing their reputation as 'epidemic villains', and the sociotechnical system of urban sanitation infrastructure expanded to include large-scale extermination efforts using rat poison. In the twenty-first century, however, the growing recognition of the city as an urban ecological system is beginning to challenge the desire to control and segregate nature. Rats are increasingly accepted or even valued for their waste work and ecological role. The sewers need rats in order to stay unclogged, while in turn the sewage infrastructure continues to help keep the animals out of human sight. Understanding shifting conceptions of the modern city requires a more-than-human approach that considers rats and sewage infrastructure together.

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