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Saving the "lungs of the city": emerging civic action in urban environmental policy: case studies from Tampere, Finland and Worcester, Massachusetts

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ABSTRACT

We have long witnessed conservation movements emerging in tandem with industrial expansion and urbanisation, but such impetus took a new turn in the 1960s and 1970s with the global birth of a new kind of urban environmental policy. In this comparative case study, we provide a close examination of two urban movements at the forefront of a new era of environmentalism, movements that bore lasting environmental policy agendas in their respective cities. Through an in-depth assessment of civic resistance to a freeway planned to cut through a town forest in Tampere, Finland as well as a deep analysis of protests against large-scale open pit waste burning in Worcester, Massachusetts, we document the development of civic claims and local leaders' counterclaims surrounding urban orientations and responsibilities to the local environment. We demonstrate how new movement ideals of health, quality of life, and nature conservation came up against entrenched governance commitments to progress, technocratic authority, and a tacit acceptance of human modification of the natural world. Through a close examination of these early movements, we seek to illuminate the path dependencies urban environmental policy contentions have followed from the 1960s to the present.

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1. Introduction

We have long witnessed conservation movements emerging in tandem with industrial expansion and urbanisation, but such impetus took a new turn in the 1960s and 1970s with the global birth of a new kind of urban environmental policy. Mobilised citizens of this era were instrumental in creating local legal precedents to address growing global environmental concerns (Haila 2002; Haila and Dyke 2006). They raised important local environmental issues that reshaped the urban political agenda, propelling a formative new period of environmental policies that would be replicated throughout the Western

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world. The pre-existing concern for nature conservation of the prior era did not diminish, but these new urban policy movements ushered in broader environmental debate in city politics. These new environmental movements became vehicles of meaning making and galvanised urban environmental awareness and action, markedly impacting local policy adoption through the concerted organisation of practical local actions. At the same time, they also drew inspiration and legitimation from the burgeoning international environmental movement.

Existing analyses of such international environmental concerns help us to understand the global level impact of advocacy movements (see, for example, Aylett 2010; Hajer 1995; Jasanoff and Martello 2004; MacGregor 2021), while an array of focused histories give us access to particular movements, including the aspects of those movements that unfolded within urban polities (Kline 2022; McGurty 1997; Rootes 2003; Silveira 2001; Uekoetter 2011). Contemporary comparisons of local urban environmental politics movements are also growing, allowing us entry points into the connections across mobilisation patterns (see also Béal 2012; Uitermark, Nicholls, and Loopmans 2012; Wells 2014). However, to our knowledge, historical comparisons between localities in different national contexts are non-existent. From the perspective of social movement analysis, the collective mobilizations that have instigated paradigm shifts in urban agendas serve as prisms into how policies and practices have become institutionalised. Therefore, study of these early contentions can help us better understand the paths that issue politics have taken (Coglianese 2001), which strategies have been employed in making political claims, and which frameworks and orientations have been most likely to garner authority (Seippel 2001).

With this paper we contribute to filling this gap via two avenues, structured around two case studies that differ in many senses, geographically, organisationally, and in terms of particular issue concerns. But we find that these cases also raise strikingly similar points for comparison, situated as new urban environmental policy movements that would usher in lasting environmental political agendas. First, in order to better understand the paths forged by emerging issue politics among some of the earliest urban environmental policy movements we present a methodical comparison between the initial urban environmental debates that took place in Worcester, US where open pit trash and demolition burning led to an uprising over threats to air quality and public health and Tampere, Finland, where plans for a new freeway raised similar concerns, specifically those surrounding the destruction of a vital town forest that residents would come to affectionately embrace as the "lungs of the city". Second, we focus on movements that instigated the pivotal turning point of the 1960s and 1970s: from early nature conservation activism to a new period of wider public consciousness about the relationship between industrial growth and environmental issues-awareness that sparked new policy advocacy. We follow how civic concern shaped local environmental policy in these cities by interrogating the issues that animated civic movements, the development of debates and responses between claimsmakers and authorities, and the ways that these developments created new issue spaces in city politics.

Our comparative case study approach enables a deeper understanding of the origins of long-lasting tensions that are now considered intrinsic to the sustainable urban development debate. At our current historical moment, as cities are being asked to lead the way through an age of climate and ecological crises (Bulkeley and Betsill 2013; Ehnert,

Egermann, and Betsch 2022; Wolfram et al. 2019), this historical analysis can help to unearth some of the foundational logics of environmental policy contention. With attunement to this broader research objective, our research question points to what was at stake in the particular, in key moments of shifting mobilizations: How did civic movements shape local environmental policy making in 1960s and 1970s in these cities? Analysed through the perspective of issues politics (Marres 2007), this research question focuses on the similarities and differences in the tension points (Flyvbjerg 2012) that emerged during the disputes in these cities. The implications we draw from historical analysis help to illuminate the bases for the dynamics of contemporary environmental policy issues and the socio-cultural space in which they are debated.

2. Urban movements and issue politics reshaping the institutional politics

Issue politics can be studied by following the continuities and discontinuities of issue formation throughout advocacy in any given campaign (Marres 2004, 132–136). By examining the public matters of concern in local environmental protests, we shift the focus away from the deeply routinised political sphere and instead target new efforts aimed at transforming politics (Latour 2007, 815–816). By documenting the emergence of first the urban environmental issue movements in each city, our study seeks to understand how citizen-led social movements redirected the policy pathway. This approach pinpoints precise moments during which new ways of thinking about local policy are opened up in local governments and attempts are made to move processes of issue formation both into and beyond these institutional settings (Marres 2007, 772).

As we follow the trajectory of these new issue movements in two cities, Worcester, US and Tampere, Finland, we analyse the incidences inciting claims by advocates, the development of those claims, the responses of local government and industry leaders to civic protest, as well as the agreements, differences, and constituent policy coalition formation within and across Tampere and Worcester – all in order to interrogate how issue politics took form.

The study of the origins of these new urban issue agendas illuminates key aspects of the trajectories of city environmental policy. Early movement studies provide an analytic window into the foundational and often path-dependent manner in which citizen activists have reshaped institutional politics (Goldstone 2003). Origin stories also reveal ruling coalitions' foundational strategic responses to movement demands regarding city policies and issue agendas, as myriad forms of refusal, co-optation, and public relations manoeuvres as well as acquiescence, negotiations leading to compromise, and transformation are possible (Hacking and Flynn 2013; Hysing 2009; Leonard and Pelling 2010; Zhang and Hamel 2021). Prior studies of urban environmental policy movements have found that particular pathways of institutionalisation had a lasting impact on the local political field, shaping future issues, agendas, movements, strategies, and organisations (Giugni and Grasso 2015; Seippel 2001). Because city leaders sometimes respond to movements in unexpected ways, there are often unintended consequences of local movements, which also reshape issue politics pathways (Giugni 1998). Whether a pathway is autonomous or one that collaborates with established authorities also has a particular effect on whether citizen groups have the opportunity to influence local policy agendas moving forward (Pruijt and Roggeband 2014). Legal and institutional

transformations can also guarantee some course of sustained action through lags in civic engagement, as legal precedents experience peaks and valleys through different waves of activism (Coglianese 2001). Granted, the nature of movement–ruling coalition interactions in a given field is key to understanding how movements might shape the future of environmental issue politics in cities (Zhang and Hamel 2021).

A growing body of research has documented how some discursive responses to environmental claims can have an inordinate impact on policy outcomes (Culhane, Hall, and Roberts 2021; Holdo 2019; Metze and Dodge 2016). Thus, underscoring how fundamental the development of discourse is to these processes, we give equal attention here to both early claims as well as governmental and industry responses. While acknowledging this iterative relationship, we also foreground the importance of particular moments; thus, the movements we have selected for comparative study are positioned at a pivotal historical shift in thinking about the urgency given to our human relationship with the natural world.

3. From "Silent Spring" to "noisy summer"

The 1960s was a new era for the convergence of environmentalism and policy change in the U.S. and in Finland. As impassioned as some Americans already were about conservation issues, the publication of Rachel Carson's *Silent Spring* in 1962 and her testimony before Congress the following year galvanised a new collective concern about the environment. Effects cascaded into Europe, including Finland (Haila and Heininen 1995, 158). Since this period, environmental problems have increasingly become perceived as tightly integrated into social processes and impacted by human activities (Haila and Heininen 1995, 158). Carson's exposé ignited new thinking not only about the harms of industrial pollutants that had long been apparent to many residents near major city centres, but it also further illuminated the consciousness of other direct-action movements to push policy change through widespread civic mobilisation with a justice frame on ecological issues. This new kind of environmental concern would be taken to the streets in an uprising of public outcry over social responsibility for the environment (Stoll 2015). As a movement benefitted from mobilising resources and skills gained in the preceding U.S. Civil Rights and anti-war movements, public awareness spread quickly. By 1966, a large "soot in" protest in New York City, for example, would draw national attention to the issue of smog and air pollution effects on public health (Rome 2003). It also ushered in formal institutional changes. In 1970, the U.S. Natural Environmental Agency was established, a Year of Natural Protection was declared by the European Council, and the now annual Earth Day was initiated; and in 1972, the United Nations Conference on the Human Environment was held in Stockholm and the pivotal *Limits to Growth* report was published. All these elements were influential in the formation of environmental concern and discussion at the global and local levels in the United States and in Europe.

On the heels of this groundswell of activism, the Kennedy administration gave national importance to Carson's testimony and a new regime of environmental advisors led to swift and sweeping institutional changes at the federal, state, and local levels in the U.S. (Griswold 2012). In Worcester, one of the country's first big industrial centres, a new city Conservation Commission had been established in 1965 and a new Division of

Air Pollution Control was added to the Office of Public Health one year later. By this time, Worcester was transitioning from an industrial to a post-industrial city and was in the process of a large urban renewal project, one that would set the stage for the new kind of environmental claims made by its residents (Barton-Aschman Associates 1963). Although the first Earth Day protest in the U.S. would not take to the streets until 1970, as the protest movement against the city's toxic waste debates were coming to a successful close, protest movements of other kinds were also regularly organising in Worcester. The papers frequently covered Civil Rights movement and anti-Vietnam War actions (Benoit 2017; Worcester Telegram & Gazette 2020). In this local political climate favourable to mobilisation, the nascent environmental movement found solid footing.

In Finland, the modern environmental movement manifest in the mid-1960s in response to rapid industrialisation that was causing strikingly visible changes in the Finnish environment. Economic development was not opposed wholesale, but the particular vision of development excluding possible alternative paths was (Konttinen 1999). The politics of the 1960s and 1970s shifted conservation to the background, spotlighting in its place an optimistic belief in technocratic reformism that offered scientific management as a solution to environmental problems. Given that, in this perspective, the priority was to maintain society's readiness to provide solutions to urgent problems, reformism triggered the development of environmental policy and related institutions (Haila and Heininen 1995). In Finland, policy began to roll in quick sequence: a year for the protection of nature was declared in 1971, the UN conference on the Human Environment's inaugural conference would follow in neighbouring Sweden in 1972, and the discourse put in motion by the now infamous 1972 *Limits to Growth* study would immediately find resonance among a new generation of Finns concerned with environmental protections (Konttinen 1999). Such momentum was evident in Tampere, where the Pirkanmaa Natural Protection Society was formed in 1979, the city of Tampere formed an Environmental Protection Committee in 1970, and the Regions Heritage Policy Association was created in 1972.

4. Methods and data

As we will see, numerous elements beyond the coincidence of timing manifested in our study's two cities, Worcester, United States and Tampere, Finland. Examining the details of these two cases helps us to understand the paradigm shift in environmentalism and environmental policy that took place around the Western world during 1960s and 1970s. Although distinct in the particular kinds of issues that gave rise to a new era of urban environmental policy claims, as long-standing industrial centres with comparable in size populations both entering a post-industrial period, these two cities share some common features. Indeed, these shared aspects make these cases emblematic of general characteristics of the societies in question (Flyvbjerg 2001, 80): they help us to understand the formative period of environmental discussion, and how civic claims were pitted against an emerging, industrial discourse of "progress" that envisions a modern city as one that is always growing and changing.

Seeking to interrogate every angle of these cases, we employed a technique of historical "process tracing" in which we detailed each step in the development of these movements and the politically contentious interaction that followed, including the claim as it

developed, each response, and all stakeholders and their involvement throughout the process. We considered the roles played by institutions, actors, and political, social, and economic relationships in shaping the early development and impact of these new environmental policy movements (George and Bennett 2005; Lange 2012). We then comparatively weighed different trajectories and outcomes and considered how different social forces shaped issue politics trajectories (Collier 2011; Mahoney 2012).

Our data are historical and archival and drawn from a number of sources. In Tampere, data were collected from eleven formal exploratory interviews: four with long-time activists, four with politicians, and four with civil servants. One of the activists occupied these categories, as he was also civil servant. Several additional fact-finding conversations were held with directors of three local environmental organisations known for their leadership in formulating environmental policy. Our core archival data were drawn from a targeted archival search of environmental movements and urban policy in the main local newspapers, *Aamulehti, Tamperelainen, Hämeen Yhteistyö and Kansan Lehti*, as well as policy documents collected from the Tampere city archives. Supplementary historical documents were found in the personal archives of the interviewees (Laine and Peltonen 2003).

In Worcester, data were collected from three formal exploratory interviews: two with long-time activists and one with a former city councilperson and later mayor active in environmental policy development. Several additional fact-finding conversations took place with directors of three local environmental organisations known for their leadership in formulating environmental policy. Core archival data were drawn from extensive coverage of environmental movements and urban policy in the *Worcester Telegram & Gazette* through an online database of America's Historical Newspapers provided by NewsBank. Data were also collected from an activist's curated archive at the Worcester Historical Museum and from the Worcester Natural History Society's archival collection housed at the American Antiquarian Society in Worcester. Supplementary historical documents were found in the archives of the Worcester Municipal Research Bureau, Worcester City Hall and Boston City Hall, and others were provided by several local citizens' organisations, including the Greater Worcester Land Trust, the Audubon Society, and the Green Hill Park Coalition.

5. A tale of two post-industrial cities

5.1. Dump fires and waste management in Worcester

Our story begins in Worcester, a Northeastern American city known as the "heart of the commonwealth" because of its central location in the state of Massachusetts. Once the largest industrial centre in the country producing over 3000 different kinds of goods (Jonas 1992), Worcester is today a mid-sized city, with a population of just over 200,000 residents (World Population Review 2024). Because of its status as an early and bustling industrial centre, Worcester has long struggled with pollution. As early as the late 1800s, residents of Worcester, as well as of adjacent towns and cities downstream, advocated against the runoff of toxic chemicals from factories and for a sewage system that could manage the industrial waste and curb resultant public health risks (Sinha 2010). Complaints about the unsavoury effects of the waste burning at the town dumps are recorded in Worcester from their inception in the 1940s, as landfills and city

dumps had been growing across the U.S. at that time (Worcester Telegram and Gazette 1968f). Newspaper archives show residents had regularly reported fires with fumes spilling over into surrounding neighbourhoods since the dump's inception. It was not until the 1960s, however, that a concerted environmental movement mobilised in Worcester in protest of the growing air pollution from the city's dump fires.

By the 1960s, the burning of plastics (which had significantly increased the waste stream by over 60% in the 1940s alone) was a primary concern because of toxic fumes (ibid). By 1961, local leaders began discussing new options for a sanitary landfill where waste could be safely buried, but none was constructed. Dump fires continued in two primary locations in the city (Worcester Telegram & Gazette 1961a; Worcester Telegram and Gazette 1961b), ramping up in the late 1960s on a grander scale following the massive demolition of the city centre for the urban renewal project that began in September of 1967. By October, the burning of large amounts of waste had so severely altered residents' quality of life that a steady stream of complaints poured into city hall (Worcester Telegram & Gazette 1968c). From this early mobilisation, this first urban environmental policy movement grew in stages, starting from a new policy pathway in Worcester, initiated by a first round of desperate pleas to city council, the city manager, and the city's public health commissioner (Worcester Telegram & Gazette 1968b).

The battle ensued in several rounds throughout the reconstruction project, as different neighbourhood groups articulated their cases, each working with an attorney and eventually taking their case to the state's capital of Boston; a broader base of supporters also mobilised across the city (Worcester Telegram & Gazette 1968g; Worcester Telegram & Gazette 1970a). Each of these neighbourhoods differed somewhat in terms of class: the Granite Street dump was surrounded by a poorer, working-class community and the Green Hill landfill area abutted the city's golf course and included mixed working- and middle-class communities. Nonetheless, they were united in their fight to escape the noxious fumes of the garbage burning, the noise pollution, and constant flow of dump trucks, as well as the many other sanitary hazards posed, including a horrendous increase in rodents infiltrating surrounding residences (Worcester Telegram & Gazette 1968a). After several years of civic advocacy at city hall, state court, on the picket line, and in the news, by waging legal action and appealing to state courts to intervene, this movement finally brought the old system of dumping and burning of waste in their backyards to a halt, pushing the city into a new era of sanitary landfills, high heat incineration, and waste removal from city limits altogether (Worcester Telegram & Gazette 1970d; Worcester Telegram & Gazette 1970e; Worcester Telegram & Gazette 1970f). Although the local Board of Health had intervened to impose temporary closures in the past, in the end, it was a formal intervention by the State Board of Health which came to rule on Worcester's trash burning in violation of air pollution laws (Worcester Telegram & Gazette 1970i). While waste issues would not be erased from the docket of civic advocacy concerns at issue – interestingly resurfacing again in the late 1990s and into the 2010s (Green Hill Park Collection 2009; Worcester Municipal Research Bureau 1998) – these early uprisings put toxic air and broader concerns with the impact of development on the local environment permanently on the city's political agenda, galvanising new movements that would take up new issue concerns in this arena in the decades to come, joining a national wave of grassroots movements to hold cities accountable for smog and other kinds of air pollution (Ferguson 2015; Gottlieb 2005; Rome 2003; Staggenborg 2020). Following the

Clean Air Act of 1963, by 1966, 53 US cities and 12 counties had legislation on solid particulate air pollution legislation on the books, including 7 cities and 4 counties with regulations specifically for incineration (Stern 1982).

5.2. Scenery freeways and forest preservation in Tampere

Similarly, Tampere's issues manifest through its industrial bases; indeed, it is known as the industrial powerhouse of Finland. The city was built on a favourable location on the banks of Tammerkoski rapids that run through its core. Seeing an opportunity to harness the power of the stream, Gustav III, the king of Sweden, signed the founding charter of the city in 1779 with tax privileges. This created favourable conditions for cotton, pulp and paper, metal and machinery industries, which really took off during the grand duchy of tsarist Russia in nineteenth century, maintained after Finland got its independence in 1917, and continued strongly until 1970s (Laine and Peltonen 2003). Tampere today is the third biggest city in Finland, with a population of 250 000 residents (Leino, Wallin, and Laine 2025).

After the Second World War, Tampere experienced rapid industrial and population growth that generated a certain optimism about the future. At the same time, the ruling coalition of Tampere became known as "the Brothers in Arms Axis". An alliance of Social Democrats and a conservative National Coalition Party, their aim was to block communists from local decision making, with the intent of preventing what was seen as the threat of Finland's independence. In Tampere, therefore, the ruling coalition saw communism as the enemy. The Brothers in Arms Axis were able to stay in power because they were perceived to be guarantors of prosperity, urban development, and the welfare state (Laine 2006; Laine and Peltonen 2003). Mayor-to-be Erkki Napolean Lindfors gave a speech in 1951 that illustrated this Zeitgeist:

> In the near future, we are going to start the construction of a central office block – the construction of a hospital for the chronically ill, a workers' institute, day care centers, vocational school training workshops, 250 flats annually, a new sports center, a new bridge and sewage treatment plant, renovation of water pipeline pumps, the construction of a new main water pipeline and renovation of its predecessor, an electrical power plant, the expansion of the public transportation system, and the construction of a new police station (quoted in Seppälä 1983; see also Laine 2006).

"Money stinks", a common phrase in Finnish industrial cities of this era, illustrates the idea that industry not only generated prosperity but also spawned pulp and paper industry by-products, such as bad smells and polluted lakes. Pollution of the Näsijärvi lake became so severe that drinking water intake was moved to another lake in the 1970s (Laine and Peltonen 2003). But the political stalemate created by the Brothers in Arms Axis finally began to transform as a number of separate disputes between the 1960s and 1980s pushed the environment into the limelight of local politics in Tampere. Altogether, there were 15 major environmental issues between the 1960s and 1980s related to powerplants and energy, urban planning, road construction, water pollution, and environmental toxins (Laine and Peltonen 2003; Peltonen 2006).

In this article we focus on the dispute surrounding the construction of the Pyynikki freeway that initiated the era of environmental disputes in Tampere. The location of Tampere city centre on a narrow isthmus between two lakes engendered the "Tampere

road problem", a constant worry of traffic planners since car traffic began expanding (Tampereen kaupunginarkisto 1988). Pyynikki ridge is in between two lakes and on the West side of the Tampere city centre. The highest gravel ridge in the world and covered mostly with pines, it has been a recreational area for the residents since city of Tampere was established.

New "scenery highway" ideas imported from the United States by Finnish ASLA Fulbright scholars after the Second World War generated the idea of a Pyynikki freeway. More generally, American traffic planning promoted the idea that transportation could be based on private cars. Planning took off when a Tampere Road planning competition was held in 1959. The entries were utilised by the National Road and Water Department, which established an office of twenty engineers in Tampere to continue the planning. The chief engineer of the office received an ASLA Fulbright scholarship during 1959–1960 (Hankonen 1994, 287–288; Polvinen 1997). The engineers came up with an overview plan of the Western freeways in Tampere in 1964, with an aim to provide grounds for the new freeway that would solve the traffic congestion and flow problem. But these plans were not simply met with celebration, Pirkanmaan Luonnonsuojeluyhdistys, the local environmental association, established a "Pyynikki commission" in 1972, which made some public arguments against the plan and strongly opposed the freeway plan behind closed doors (Laine and Peltonen 2003).

6. Issue politics in two cities

The emergence of new urban environmental policy movements in these two cities unfolded in some common but also some notably different ways. In Worcester, the conflict focused on active and urgent environmental crises, whereas in Tampere the dispute centred on the potential risks of a plan under consideration. However, the key issues in both cities were remarkably similar in that they both emerged from a new kind of early urban environmental politics; thus, they stand as path-defining movements of a new era (Goldstone 2003). *Health, quality of life* and *the concern over urban nature* were the focus of resistance to the Pyynikki freeway plan in Tampere, Finland; and protest over the dump fires and waste management in Worcester, U.S. were framed as *health* and *quality of life* issues due to the harmful exposure to toxic fumes, with new mobilisation for the environment following resolution of this issue. In both cities, claims made over these issues were countered by arguments from city officials and industry leaders who promoted *progress* and *technocratic competence* (good planning in city growth and development, management and efficiency) undergirded by an argument in Tampere that the integrity of nature in question was a moot point, as it was proclaimed that *nature is intrinsically altered* by human action. In examining this emergent discourse, we turn first to citizens' presentation of the key issues and the particularities of argumentation behind each issue, followed by an exploration of the issues raised by city officials and industrial actors.

6.1. Health

Closer analysis (see Table 1) reveals that the issue of *health* was a principal concern in both cities' movements, as they foregrounded the impending impact of endangered air quality.

Table 1. Common Claims among Early Environmentalists in Tampere, Finland, and Worcester, United States: Health, quality of life and urban nature conservation

	Tampere (1960–1973)	Worcester (1968–1970)
Health	The "lungs of the city" will get smaller (Pyynikki Commission 1973)	"Air pollution study reveals annual costs of $12 million" (*Worcester Telegram*, February 3, 1968) "Terrible fumes"
Quality of Life	"The central park of Tampere will diminish" "Access to waterfront will be more difficult" "Increasing loitering and vagrancy" (Pyynikki Commision 1973)	"An inescapable stench … rats and other vermin, general unsightliness, a terrible smoke" "You need to turn your car lights on some days to drive down Granite Street [because of the thick smoke]" (*Worcester Telegram*, February 28, 1968)
Urban Nature Conservation	"The quality of the environment will decrease" "Construction phase will generate manifold environmental hindrance" "There are freeways and traffic james everywhere, but only one irreplaceable Pyynikki" (Pyynikki Commision 1973)	In 1971, Green Hill Park's dump and landfill refurbished and a public park is constructed (Antonelli 2015) Following dump fires protests, advocates raise concerns over integrity of the city's waterways and a massive cleanup gets underway (Turken 2022) Movement spins off into lasting environmental advocacy, later focusing on land conservation in the county, with Mayor commission report, *What's Left: An Update on Worcester's Open Space* (1987)

In Worcester, the immediate effects were already being felt by residents proximate to the dump fires. Protesting citizens brought vivid evidence into a heated legal battle, from a Department of Health study on the public health costs of poor air quality, to residents' testimonies of living in daily smoke. In Tampere, the pine forest on the slopes of the ridge of Pyynikki was called the "lungs of city" and protesters declared it endangered by the planned freeway. Citizens were already experiencing the effects of hugely increasing private car traffic, and the Pyynikki forest thus represented a possible escape from air pollution – a nurtured space of clean air.

6.2. Quality of life

From the perspective of *quality of life*, in Worcester, the complainants pointed to the need for access to nearby parks and, next to one of the dumps, a municipal golf course. Moreover, citizens felt nuisanced by the "deplorable stench" as well as "rats" and other vermin, not to mention the "general unsightliness" coming from the dumps (Worcester Telegram & Gazette 1970b; Worcester Telegram & Gazette 1970c; Worcester Telegram & Gazette 1970g). In Tampere, advocates raised concerns over access to park waterfronts, "losing the lungs of the city", and the overall integrity of the environment as they also voiced fears over the possible "antisocial behavior" that the freeway structures would engender (Laine and Peltonen 2003; Pyynikki Commission 1973.)

6.3. Concern over urban nature

The third issue at stake in the public's resistance dealt with a *concern over urban nature*. In Worcester, this perspective was not yet fully expressed in the arguments, as in this context the crisis was already underway, as an emergency issue that was ongoing – one

contextual feature that differed in Worcester from in Tampere, where civic advocates were debating a plan yet to be implemented. Worcester citizens were instead concerned about their perpetual "terrible, deplorable condition" of living in constant plumes of smoke from burning trash and exposure to high levels of toxicity, as well as the physical insecurities of living near dump sites that constantly burst into fires (Worcester Telegram & Gazette 1968b; Worcester Telegram & Gazette 1970c). An impassioned plea for considering urban impacts on the integrity of the natural environment would be more expressly articulated in the movement that would follow the dump fires protests (made possible by the dump fires advocacy): the movement to clean up city waterways (Kotsopoulos 2020; Interview with Larry Freed 2022).

In Tampere, the concern over the future of the unique nature area was one of the key issues raised in the public debates. Pyynikki Commission argued on 6.1.1973: "A high standard of living includes rich and diverse natural environment that has not been ravaged. There are highways and traffic jams everywhere but the nature of Pyynikki is unique and untouched" (Pyynikki Commission 1973). Overall, a concern over the quality of the environment during the possible construction phase was raised, as well as the coming traffic jams that would further threaten the natural value of the area and block the connection to the waterfront.

6.4. Progress

In both cities, the ruling administrations saw these contentions through a framework of city progress (see Table 2). In Worcester, a city government editorial entitled "The Rubble of Progress" countered that residents in dump neighbourhoods needed to understand that the nuisance of the smoke would be temporary, and that there were more important long-term benefits for a city on the cusp of renewal (Worcester Telegram & Gazette 1968h). The local government pushed back against the state-ordered closures,

Table 2. Common Rebuttals among Government and Industry Leaders in Response to Environmentalists' Protest: Progress, technocratic competence (good planning; good management; efficiency), and nature as already modified by human action.

	Tampere (1960–1973)	Worcester (1968–1970)
Progress	"Pyynikki ridge should be protected as much as possible" Comment by Governmental Natural Protection Supervisor (Tie- ja Vesirakennuslaitos [Road and Water Construction Department] 1964)	"The rubble of progress … it is only for three more months" (Worcester Telegram, March 23, 1968) "It takes tolerance on the part of the public" City Manager McGrath, March 19, 1968
Technocratic Expertise	"The natural beauty of Pyynikki can be protected with good planning" (Tampereen tiekilpailun arvostelupöytäkirja [Tampere Road Competition Evaluation Report] 1960) "The freeway may add new values to Pyynikki, it will highlight the steepness of the ridge and the grandeur of the pine forest" (Tie- ja Vesirakennuslaitos [Road and Water Construction Department] 1964)	"The dump can meet health standards with good management by the city's Air Pollution Control Manager" (*Worcester Telegram*, March 13, 1968) "The dump can be converted into a recreation area for the future" (*Worcester Telegram*, August 29, 1968)
Nature as Modified	"Pyynikki is not in a natural state, it has already been harmed before" (Tie- ja Vesirakennuslaitos [Road and Water Construction Department] 1964)	"Green Hill site is already an existing quarry" (*Worcester Telegram*, May 17, 1969)

noting that the renewal would come with a cost of future demolition and building projects (Worcester Telegram & Gazette 1970h).

Whereas in Worcester the citizens were asked to be patient (Worcester Telegram & Gazette 1968g), in Tampere the progress perspective emphasised the inescapability of urban development, suggesting that nature preservation was to be conceived of within this framework. The Tampere discussions were enveloped in cultural notions of the betterment of the welfare state providing benefits to the whole Tampere population and nature would be protected as much as possible though expected to bend to this curve of development (Tie- ja vesirakennuslaitos 1964).

6.5. Technocratic competence

The frame most emphasised by Tampere officials was technical expertise and competence, however. Thus, a *technocratic reformism* dominated the civil servants' argumentation (Haila and Heininen 1995). In Worcester, the same can be seen in the reliance on expert authorities to legitimate counter-proposals, even those that pushed back against state mandates to expediently close the dump. For example, administrators assured the protesting public that the dumps could meet health standards with good management by the Air Pollution Control Manager (Worcester Telegram & Gazette 1968e). Following the city governance's championed allowance of demolition burning, expert engineers and architects were consulted to propose that the dump could be covered and converted into a recreation area for the future (Worcester Telegram & Gazette 1968d; Worcester Telegram & Gazette 1968i; Worcester Telegram & Gazette 1970c).

The phrasing of the freeway plan in Tampere (Tie- ja vesirakennuslaitos 1964) revealed that Pyynikki ridge was considered a sensitive political issue. The wording was carefully scripted to acknowledge the value of Pyynikki, but at the same time the benefits of construction were highlighted: "The freeway might add new values to Pyynikki, it will highlight the steepness of the slopes of the ridge and the grandeur of the Pine Forest" (Tie- ja vesirakennuslaitos 1964).

6.6. Nature is already modified

In both cities, the ruling coalition of government officials and industry leaders eventually took on a distinct stance against an epistemology of conservation, rebutting that *nature had already been modified by human action* (see Table 2). From Tampere, officials argued that Pyynikki constituted a regrowth (not old growth) forest that had been stewarded by an earlier industrial era city population. This new phase could be seen as a continuation of a tradition of human stewardship over the land. In Worcester, officials pointed outward, insisting that citizens identify one major city in the nation that had figured out its trash problems; they could not (Worcester Telegram & Gazette 1969b). Officials also pointed out that the Green Hill dump had long been an existing quarry, such that the use of the area for demolition would simply constitute the next phase in land use (Worcester Telegram & Gazette 1969a; Worcester Telegram & Gazette 1969c; Worcester Telegram & Gazette 1970b).

In both cases, the paradigm-shifting impact of these first urban environmental movements was underscored in the nature of the development of claims and counter-claims, which have had a lasting impact. On the one hand, these earliest urban environmental contentions established a new and permanent place for environmentalism in the city policy agenda, for example in Tampere in 1970 the city established a committee for pollution prevention and environmental protection. Due to environmental disputes during the rest of the 1970s, local Greens participated to the municipal elections on these issues in 1984. Finally, the City of Tampere decided to institute the Environmental Protection Board and Environmental Protection Department in 1986 (Laine 2006; Laine and Peltonen 2003; Peltonen 2006). In Worcester, in 1971, the Regional Environmental Council of Worcester was established and so too a focused Salisbury Pond Task Force both of which involved industry and business in the area, city officials, the public health department, Worcester Polytechnic Institute students, a Navy Construction Battalion the National Guard, and eventually over 10,000 to clean thousands and thousands of cubic tons of toxic waste in the surrounding waterways (Turken 2022), following another long fight in city hall through the Conservation Commission to permanently commit to managing water quality (Interview with Larry Freed 2022). This led to the establishment of the first state wetlands protection act upon which the federal act would be modelled and in 1976 of a local Wastewater plant. In 1986, the first city Mayor committed to urban environmentalism was elected. He immediately commissioned a report on remaining undeveloped areas (City of Worcester 1987), which led to the establishment of The Greater Worcester Land Trust as well as a number of local wildlife sanctuaries (Interview with John Anderson 2022). Thus, in both cities, the environment has continued to be an important concern for *health*, the *quality of life* of city residents and the *concern over nature* that city growth must respect.

On the other hand, the results of these contentions have not led to an either/or scenario; rather, in both cities today, we can see an attempt to have both the ideals of the environmental movement and the promise of growth and progress realised – despite the fact that these ideals remain in contradistinction. As the ruling coalition still leaned towards an industrial-age epistemology of human supremacy over nature, assuming dead any "original nature" not altered by humans (à la Merchant 2019), they, too, fashioned new arguments about progress alongside nature, led by experts and their technological solutions. This builds on foundational industrial frameworks already operative before the urban environmental turn, albeit with a revised framing to incorporate how both citizen demands and technocratic plans could work together. In both cases, it should further be stated, these processes by which ruling coalitions came to a generalised consensus were neither easy nor simple. In Tampere, a member of the City Government and a key player in local politics started to question the Pyynikki freeway plan in total (Laine and Peltonen 2003, 119–121). In addition, a person working in the Roads and Waterways Administration established a Pyynikki Commission whose views conflicted with those of the administration. In Worcester, at many times throughout the dump fires battles and the contentious environmental policy debates to follow, insiders among the city council and among different institutions (like the Public Health Commission and the Conservation Commission) would sometimes back leaders but at other times take contention with leaders' responses to citizen protest. Worcester and Tampere movement cases are exemplary of the dawning of an era that would witness new kinds of

environmental claims as the local environmental impacts of urban development had started to manifest in the everyday life of citizens that raised open political debates.

7. Conclusions: urban movements and policy paradigm shifts

Eventually, both movements came to a resolution that offered some concessions to and some significant compromise on the part of concerned citizens. In Tampere, Pyynikki would remain a town forest, beloved by neighbourhood residents to this day for its towering spruce trails and pristine views of the lake. In Worcester, both dumps were eventually closed, and the city would instead construct two sanitary landfills, one that would later be covered in solar panels. In summary, these two cases from the 1960s and 1970s illuminate the politicisation of urban environmental concerns, how they found their way onto the permanent political agenda, and how citizens and officials navigated the relationships between nature, progress, and technocratic expertise. Furthermore, in both cities these civic claims were openly conflictual, but aspects of these contentions developed in different public and semi-public stages.

In each case, these movements expanded the possibility space (Haila 2002; Haila and Dyke 2006) for environmental policy. It is important to note that the possibility space is not expanded by a large numbers of cases, but by significant ones in a given socio-cultural context (Haila 2002, 65). They both emerged at the time when environmental issues had initial attention. Konttinen (1999) has argued that the wave of environmental protest in the late 1960s was counter-cultural in the sense that the hegemonic ideologies of industrialism and materialism were called into question, and the environmental protest movement also seemed to counter these ideologies. New environmental claims were not able to effectively shake this dominant ideology. Thus, to Konttinen, the function of this wave was mostly one of opening up a new way of thinking – it did not significantly make changes at a deeper level of policy. In our case studies, we found this to be partly true. The highway was still constructed in Tampere to a place where the environmental impact was much less and the downtown renewal was undertaken in Worcester as waste issues have also continued to be a problem in the decades since. However, these movements had a lasting impact on the city agenda – an outcome that should not be dismissed. As a result of these conflicts and the increase in general awareness of environmental problems in urban areas, both cities established environmental departments and sustainability strategies. Moreover, these local movements were vital in creating political green coalitions that became influential at the national level (Domaradzka 2018; US Environmental Protection Agency 2024).

Still, our study raises an important question: how much, if at all, have urban politics changed since the times of our case studies? Or, have urban politics receded from the foundational framework of the modern city? In Worcester, the city's commitment to growth continues in "segregated policy lanes", wherein activists may be conceded small, "green" side projects so long as they don't disrupt the business-as-usual urban development the city still counts on economically and socially: to make it a profitable enterprise and appealing place to live and visit. As the city sustainability manager has explained of the city's orientation to civic claims, the city is much more interested in building bigger pipes to address the growing volumes of wastewater flow than to address the toxicity of that flow or how it affects the bay.

In Tampere, environmental concerns and issues have been merged as part of the sustainable city development strategy (Jokinen et al. 2018). Thus, the environmental viewpoint has been absorbed into the city's political regime, and progress and development have come to include both technocratic competence and the issues of healthy, sustainable quality of life. The issues previously promoted by the urban environmental movements are now negotiable in terms of how they can be utilised to promote city growth and construction projects – a phenomenon of economic and political elites hijacking environmental activities and incorporating them into creative city branding that is widely recognised (Domaradzka 2018; Uitermark 2004).

Currently, environmental issues – especially climate change and biodiversity loss – are globally recognised concerns. The possibility space for urban environmental issues has expanded since this early era and become a global concern along the UN SDGs. Tampere has signed the covenant of mayors in which the aim is to reach the EU climate mitigation and adaptation targets. Worcester, too, has signed the US Climate Mayors Statement pledging to adopt and implement the goals set forth by the Paris Accords. Thus, urban environmental policy aspects are tied to the market-oriented ethos and sustainable urban development, and they have become predominantly depoliticized on local levels (Leino et al. 2023; Leino, Wallin, and Laine 2025). Following the trajectories of those earliest of urban environmental movements and the foundational strategies of ruling coalitions devised in response, we argue that environmental issues entered into these local discourses as part of the permanent agenda of urban policies. Still, the possibility space for urban environmental policy has not expanded to a degree satisfactory to those at the frontlines of environmental advocacy. Future research should explore how new possibility spaces may foster pivotal transformations that redirect entrenched policy pathways and under what conditions contemporary urban environmental policy movements can call the contradictions of conservation and growth into question.

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References

Anderson, J. 2022. Interview with Author.

Antonelli Jr., R. 2015. "A History of Green Hill Park in the City of Worcester, Massachusetts." City of Worcester, Massachusetts. Accessed September 1, 2025: https://greenhillparkcoalition.org/wp-content/uploads/2021/11/GHP-cityhistory.pdf.

Aylett, A. 2010. "Conflict, Collaboration and Climate Change: Participatory Democracy and Urban Environmental Struggles in Durban, South Africa." *International Journal of Urban and Regional Research* 34 (3): 478–495. https://doi.org/10.1111/j.1468-2427.2010.00964.x.

Barton-Aschman Associates. 1963. "Background for Renewal." *Community Renewal Program Study Volume I*, May.

Béal, V. 2012. "Urban Governance, Sustainability and Environmental Movements: Post-democracy in French and British Cities." *European Urban and Regional Studies* 19 (4): 404–419. https://doi.org/10.1177/0969776411428562.

Benoit, K. 2017. "Illusion Wrapped in Superficiality: Struggles for Civil Rights in 1960s Worcester, Massachusetts." Accessed February 13, 2025. https://civilrightsworcester.wordpress.com

Bulkeley, H., and M. M. Betsill. 2013. "Revisiting the Urban Politics of Climate Change." *Environmental Politics* 22 (1): 136–154. https://doi.org/10.1080/09644016.2013.755797.
City of Worcester. 1987. *What's Left: An Update on Worcester's Open Space*. Report.
Coglianese, C. 2001. "Social Movements, Law, and Society: The Institutionalization of the Environmental Movement." *University of Pennsylvania Law Review* 150 (1): 85–118. https://doi.org/10.2307/3312913.
Collier, D. 2011. "Understanding Process Tracing." *PS: Political Science & Politics* 44 (4): 823–830. https://doi.org/10.1017/S1049096511001429.
Culhane, T., G. Hall, and J. T. Roberts. 2021. "Who Delays Climate Action? Interest Groups and Coalitions in State Legislative Struggles in the United States." *Energy Research & Social Science* 79:102114. https://doi.org/10.1016/j.erss.2021.102114.
Domaradzka, A. 2018. "Urban Social Movements and the Right to the City: An Introduction to the Special Issue on Urban Mobilization." *Voluntas: International journal of voluntary and nonprofit organizations* 29 (4): 607–620. https://doi.org/10.1007/s11266-018-0030-y.
Ehnert, F., M. Egermann, and A. Betsch. 2022. "The Role of Niche and Regime Intermediaries in Building Partnerships for Urban Transitions towards Sustainability." *Journal of Environmental Policy & Planning* 24 (2): 137–159. https://doi.org/10.1080/1523908X.2021.1981266.
Ferguson, C. 2015. *This Is Our Land: Grassroots Environmentalism in the Late Twentieth Century*. New Brunswick, NJ: Rutgers University Press.
Flyvbjerg, B. 2001. *Making Social Science Matter: Why Social Inquiry Fails and How It Can Succeed Again*. Cambridge: Cambridge University Press.
Flyvbjerg, B. 2012. "Why Mass Media Matter to Planning Research: The Case of Megaprojects." *Journal of Planning Education and Research* 32 (2): 169–181. https://doi.org/10.1177/0739456X12441950.
Freed, L. 2022. Interview with Author.
George, A. L., and A. A. Bennett. 2005. *Case Studies and Theory Development in the Social Sciences*. Cambridge, MA: MIT Press.
Giugni, M. G. 1998. "Was it Worth the Effort? The Outcomes and Consequences of Social Movements." *Annual Review of Sociology* 24 (1): 371–393. https://doi.org/10.1146/annurev.soc.24.1.371.
Giugni, M., and M. T. Grasso. 2015. "Environmental Movements in Advanced Industrial Democracies: Heterogeneity, Transformation, and Institutionalization." *Annual Review of Environment and Resources* 40 (1): 337–361. https://doi.org/10.1146/annurev-environ-102014-021327.
Goldstone, J. A. 2003. *States, Parties, and Social Movements*. Cambridge: Cambridge University Press.
Gottlieb, R. 2005. *Forcing the Spring: The Transformation of the American Environmental Music*. Washington D.C.: Island Press.
Green Hill Park Collection. 2009. Series 1 Green Hill Park, Subseries 2 Landfill, Newspaper Articles form 1970–1976 about the landfill at the park. Worcester Historical Museum Archives 2009.06.
Griswold, E. 2012. "How 'Silent Spring' Ignited the Environmental Movement." *New York Times Magazine*. September 12.
Hacking, N., and A. Flynn. 2013. "Networks, Protest and Regulatory Systems: The Case of Energy from Waste." *Local Environment* 19 (3): 334–355. https://doi.org/10.1080/13549839.2013.790353.
Haila, Y. 2002. "Scaling Environmental Issues: Problems and Paradoxes." *Landscape and Urban Planning* 61 (2–4): 59–69. https://doi.org/10.1016/S0169-2046(02)00102-0.
Haila, Y., and C. Dyke. 2006. *How Nature Speaks: The Dynamics of the Human Ecological Condition*. Durham and London: Duke University Press.
Haila, Y., and L. Heininen. 1995. "Ecology: A new Discipline for Disciplining?" *Social Text* (42): 153–171. https://doi.org/10.2307/466668.
Hajer, M. A. 1995. *The Politics of Environmental Discourse: Ecological Modernization and the Policy Process*. Oxford: Clarendon Press.
Hankonen, J. 1994. *Lähiöt ja tehokkuuden yhteiskunta : suunnittelujärjestelmän läpimurto suomalaisten asuntoalueiden rakentumisessa 1960-luvulla [Suburbs and the Society of Efficiency: The Breakthrough of the Planning System in the Construction of Finnish Residential Areas in the 1960]*. Tampere: Otatieto.

Holdo, M. 2019. "Cooptation and Non-cooptation: Elite Strategies in Response to Social Protest." *Social Movement Studies* 18 (4): 444–462. https://doi.org/10.1080/14742837.2019.1577133.
Hysing, E. 2009. "Greening Transport – Explaining Urban Transport Policy Change." *Journal of Environmental Policy & Planning* 11 (3): 243–261. https://doi.org/10.1080/15239080903056417.
Jasanoff, S., and M. Martello. 2004. *Earthly Politics: Local and Global in Environmental Governance*. Cambridge: MIT press.
Jokinen, A., H. Leino, P. Bäcklund, and M. Laine. 2018. "Strategic Planning Harnessing Urban Policy Mobilities: The Gradual Development of Local Sustainability fix." *Journal of Environmental Policy & Planning* 20 (5): 551–563. https://doi.org/10.1080/1523908X.2018.1454828.
Jonas, A. E. G. 1992. "Corporate Takeover and the Politics of Community: The Case of Norton Company in Worcester." *Economic Geography* 68 (4): 348–372. https://doi.org/10.2307/144024.
Kline, B. 2022. *First along the River: A Brief History of the U.S. Environmental Movement*, 5th ed. Lanham, MD: Rowman and Littlefield.
Konttinen, E. 1999. "Four Waves of Environmental Protest." In *All Shades of Green, The Environmentalization of Finnish Society*, edited by E. Konttinen, T. Litmanen, M. Nieminen, and M. Ylönen, 20–46. SoPhi, Jyväskylä: Jyväskylä University Press.
Kotsopoulos, N. 2020. "Advocate Led Green Hill, Lake Quinsig Out of Dark Days." *Worcester Telegram & Gazette*, May 2. Online.
Laine, M. 2006. ""Fight over the Face of Tampere." a Sneaking Transformation of a Local Political Field." In *How Nature Speaks. The Dynamics of the Human Ecological Condition*, edited by Y. Haila and C. Dyke, 177–197. Durham and London: Duke University Press.
Laine, M., and L. Peltonen. 2003. *Ympäristökysymys ja aseveliakseli-Ympäristön. politisoituminen Tampereella vuosina 1959–1995 [The Environmental Issue and the Brotherhood Axis: The Politicization of the Environment in Tampere from 1959 to 1995.]*. Tampere: Tampere University Press.
Lange, M. 2012. *Comparative-Historical Methods*. Thousand Oaks, CA: SAGE Publications Ltd.
Latour, B. 2007. "Turning around Politics: A Note on Gerard de Vries' Paper." *Social Studies of Science* 37 (5): 811–820. https://doi.org/10.1177/0306312707081222.
Leino, H., M. Laine, A. Jokinen, and P. Jokinen. 2023. "Nordic Environmental State in the Making? A Practice View of the Green Transition." In *Finnish Public Administration: Nordic Public Space and Agency*, edited by E. Pekkola, J.-E. Johansson, and M. Mykkänen, 279–291. Cham: Springer International Publishing.
Leino, H., A. Wallin, and M. Laine. 2025. "Eco-gentrification in a Welfare State: How Sustainable City Development Gradually Reduces Social Equity." *Urban Affairs Review* 61 (1): 70–93. https://doi.org/10.1177/10780874241241258.
Leonard, L., and M. Pelling. 2010. "Mobilisation and Protest: Environmental Justice in Durban, South Africa." *Local Environment* 15 (2): 137–151. https://doi.org/10.1080/13549830903527654.
MacGregor, S. 2021. "Finding Transformative Potential in the Cracks? The Ambiguities of Urban Environmental Activism in a Neoliberal City." *Social Movement Studies* 20 (3): 329–345. https://doi.org/10.1080/14742837.2019.1677224.
Mahoney, J. 2012. "The Logic of Process Tracing Tests in the Social Sciences." *Sociological Methods & Research* 41 (4): 570–597. https://doi.org/10.1177/0049124112437709.
Marres, N. 2004. "Tracing the Trajectories of Issues, and Their Democratic Deficits, on the Web: The Case of the Development Gateway and Its Doubles." *Information Technology & People* 17 (2): 124–149. https://doi.org/10.1108/09593840410542475.
Marres, N. 2007. "The Issues Deserve More Credit: Pragmatist Contributions to the Study of Public Involvement in Controversy." *Social Studies of Science* 37 (5): 759–780. https://doi.org/10.1177/0306312706077367.
McGurty, E. M. 1997. "From NIMBY to Civil Rights: The Origins of the Environmental Justice Movement." *Environmental History* 2 (3): 301–323. https://doi.org/10.2307/3985352.
Merchant, C. 2019. *The Death of Nature: Women, Ecology and the Scientific Revolution*. New York: HarperCollins.

Metze, T. P., and J. Dodge. 2016. "Dynamic Discourse Coalitions on Hydro-Fracturing in Europe and the United States." *Environmental Communication* 10 (3): 365–379. https://doi.org/10.1080/17524032.2015.1133437.

Peltonen, L. 2006. "Fluids on the Move: An Analogical Account of Environmental Mobilization." In *How Nature Speaks. The Dynamics of the Human Ecological Condition*, edited by Y. Haila and C. Dyke, 150–176. Durham and London: Duke University Press.

Polvinen, M., & Hämeen tiepiiri, Konsultointiyksikkö [*Häme Road District. Consulting Unit]*. 1997. *On tie ennenkin löydetty: Suunnittelijan taival 1959–1997 [The Road Has Been Found Before: The Journey of a Planner 1959–1997]*. Hämeen tiepiiri, konsultointiyksikkö.

Pruijt, H., and C. Roggeband. 2014. "Autonomous and/or Institutionalized Social Movements? Conceptual Clarification and Illustrative Cases." *International Journal of Comparative Sociology* 55 (2): 144–165. https://doi.org/10.1177/0020715214537847.

Pyynikki toimikunta [Pyynikki Commission]. 1973. Muistio Pyynikkitoimikunnan työn yhteydessä esiin tulleista Pyynikin harjun suojelua koskevista asioista [Memo on Issues Related to the Protection of Pyynikki Ridge that Emerged During the Work of the Pyynikki Committee]. 6.1.1973.

Rome, A. 2003. "Give Earth a Chance: The Environmental Movement and the Sixties." *Journal of American History* 90 (2): 525. https://doi.org/10.2307/3659443.

Rootes, C. 2003. *Environmental Protest in Western Europe*. Durham and London: Oxford University Press.

Seippel, Ø. 2001. "From Mobilization to Institutionalization? The Case of Norwegian Environmentalism." *Acta Sociologica* 44 (2): 123–137. https://doi.org/10.1080/000169901300346873.

Seppälä, R. 1983. *Tampereen Napoleon [The Napoleon of Tampere]*. Helsinki: Otava.

Silveira, S. 2001. "The American Environmental Movement: Surviving through Diversity." *Environmental Affairs* 28:497–532.

Sinha, D. R. 2010. "The Environmental Kuznets Curve Hypothesis and Legacy Pollution: A Geohistorical Analysis of the Environmental Consequences of Industrialization in Worcester, Massachusetts (USA)." *The Industrial Geographer* 7 (1): 1–18.

Staggenborg, S. 2020. *Grassroots Environmentalism*. Cambridge: Cambridge University Press.

Stern, A. 1982. "History of Air Pollution Legislation in the United States." *Journal of the Air Pollution Control Association* 32 (1): 44–61. https://doi.org/10.1080/00022470.1982.10465369.

Stoll, M. 2015. *Inherit the Holy Mountain: Religion and the Rise of American Environmentalism*. Oxford: Oxford University Press.

Tampereen kaupunginarkisto [Tampere City Archive]. 1988. Kaupunginarkiston selvitys Pyynikin moottoritiestä [*Report of Pyynikki Freeway]*, City of Tampere, June 1988.

Tie- ja vesirakennuslaitos [Road and Water Construction Department]. 1964. *Tampereen läntiset moottoritiet; Yleisesitys, kustannukset ja näköalakuvat [Western Highways of Tampere; General Presentation, Costs, and Scenic Views]*, TVL, Hämeen piiri [Häme District].

Turken, S. 2022. "Blackstone River still suffers from pollution 50 years after massive cleanup." WGBH Online, September 9. Accessed March 7, 2025: https://www.wgbh.org/news/local/2022-09-09/blackstone-river-Still-suffers-from-pollution-50-years-after-massive-cleanup

Uekoetter, F. 2011. "Consigning Environmentalism to History? Remarks on the Place of the Environmental Movement in Modern History." *RCC Perspectives* 7: 1–36. https://doi.org/10.5282/rcc/5588.

Uitermark, J. 2004. "The co-optation of Squatters in Amsterdam and the Emergence of a Movement Meritocracy: A Critical Reply to Pruijt." *International Journal of Urban and Regional Research* 28 (3): 687–698. https://doi.org/10.1111/j.0309-1317.2004.00543.x.

Uitermark, J., W. Nicholls, and M. Loopmans. 2012. "Cities and Social Movements: Theorizing beyond the Right to the City." *Environment and Planning A: Economy and Space* 44 (11): 2546–2554. https://doi.org/10.1068/a44301.

US Environmental Protection Agency. 2024. "EPA Publishes its 2024–2027 Climate Adaptation Plan" June 20. Accessed March 6, 2025. https://www.epa.gov/newsreleases/epa-publishes-its-2024-2027-climate-adaptation-plan-0#:~:text=In%20March%202024%2C%20EPA%20launched,agency's%20mission%20and%20its%20partnerships

Wells, C. W. 2014. "Green Cities, the Search for Sustainability, and Urban Environmental History." *Journal of Urban History* 40 (3): 613–620. https://doi.org/10.1177/0096144213516085.
Wolfram, M., J. van der Heijden, S. Juhola, and J. Patterson. 2019. "Learning in Urban Climate Governance: Concepts, key Issues and Challenges." *Journal of Environmental Policy & Planning* 21 (1): 1–15. https://doi.org/10.1080/1523908X.2018.1558848.
Worcester Municipal Research Bureau. 1998. *Should Worcester Use the Green Hill Park Landfill for Street Sweeping and Catch-basin Materials?* Report No. 98–1, January 26.
Worcester Telegram & Gazette. 1961a. "Dump Burning Halted." October 11, Page 18.
Worcester Telegram & Gazette. 1961b. "Sanitary Landfill." October 17, Page 13.
Worcester Telegram & Gazette. 1968a. "Drastic Action Urged to Quell Dump Fires." Worcester Telegram & Gazette February 3, page 11.
Worcester Telegram & Gazette. 1968b. "Improvement is Vowed on Debris Issues." February 6, Page 14.
Worcester Telegram & Gazette. 1968c. "Residents Ask State at Hearing to Close Granite Street Dump." February 28, page 17.
Worcester Telegram & Gazette. 1968d. "US to Test New Incinerator." March 7, Page 22.
Worcester Telegram & Gazette. 1968e. "Green Hill Dump Closed; Opens Under Stricter Rules." March 13, Page 17.
Worcester Telegram & Gazette. 1968f. "City Dump's Future Uncertain." March 17, Page 24A.
Worcester Telegram & Gazette. 1968g. "MacLeod sets June 2 for Closing of Green Hill Dump." March 22, Page 19.
Worcester Telegram & Gazette. 1968h. "The Rubble of Progress" March 23, Page 6.
Worcester Telegram & Gazette. 1968i. "Dump at Green Hill to Close Saturday." August 29, Page 21.
Worcester Telegram & Gazette. 1969a. "Committee, Advisors Favor Landfill Dump." May 17, Page 13.
Worcester Telegram & Gazette. 1969b. "Landfill Dump Protest." December 12, pp. 27–28.
Worcester Telegram & Gazette. 1969c. "Green Hill Eyed as Landfill Site." December 19, Page 25.
Worcester Telegram & Gazette. 1970a. "Green Hill or Filter Beds? Landfill Decision Due Today." January 23, Page 17.
Worcester Telegram & Gazette. 1970b. "McGrath Again Asks Dump at Green Hill." February 13, Page 17.
Worcester Telegram & Gazette. 1970c. "Dump Site Choice Again Delayed." February 18, pp. 1–2.
Worcester Telegram & Gazette. 1970d. "Dump Owner Asks Court to Ban Pickets." February 20, Page 18.
Worcester Telegram & Gazette. 1970e. "Incinerator Hearing for Feb. 27 in Boston." February 20, Page 17.
Worcester Telegram & Gazette. 1970f. "Belmont St. Area Council: Parley Called to Oppose Dump Site at Green Hill." February 20, pp. 17–18.
Worcester Telegram & Gazette. 1970g. "Parks Board Delays Dump Issue Action." February 24, pp. 13–14.
Worcester Telegram & Gazette. 1970h. "Action on Dump Deferred." February 25, Page 17.
Worcester Telegram & Gazette. 1970i. "State Board of Health Proposes Ban on Outdoor Burning Effective July 1." February 28, Page 13.
Worcester Telegram & Gazette. 2020. "Historic Photos: Anti-War Protests in Worcester in 1970." May 7, Online.
World Population Review. 2024. "Worcester city, Massachusetts Population 2024." Accessed March 6, 2025. https://worldpopulationreview.com/us-cities/massachusetts/worcester
Zhang, X., and P. Hamel. 2021. "Thinking of Anti-incineration Protests in Strategic Action Fields: Three Case Studies in Mainland China." *Local Environment* 26 (6): 673–691. https://doi.org/10.1080/13549839.2021.1916897.