



London's New Super Sewer:
**Have We Learned Anything
Since Bazalgette?**

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Abstract

The Thames Tideway, a £5 billion tunnel beneath the Thames to deal with sewage overflows has just been completed in London. This solution looks strikingly like one built over 150 years ago, by Sir Joseph Bazalgette. This thesis asks why the Thames Tideway Tunnel (TTT), a centralised, engineering-heavy solution was chosen over more sustainable and distributed alternatives. Why, in an age of climate urgency are we still building bigger pipes? The thesis argues that the answer lies not only in technical feasibility but in deeply embedded cultural narratives, institutional habits, and financial models.

The first part of the thesis explores how the legacy of Sir Joseph Bazalgette has been mythologised and invoked to legitimise the TTT today. The second part draws on the concepts of sociotechnical imaginaries and historical institutionalism, examining how professional values, government policy frameworks, and investment structures become entrenched and reinforce techno-optimistic views, taken as 'common sense'.

The thesis brings together cultural analysis and a historical institutionalist approach to planning theory to show how the past constrains the future, not just through physical systems, but through stories we tell ourselves. By exposing these narratives, imaginaries, and structures, the thesis argues for a more just, reflective, and democratic planning of infrastructure. In the interest of ecological resilience, we must reimagine our cultural views of water, waste, and how we live with the environment, to avoid getting stuck in the past.

Key words

Sewage, London, Bazalegette, Thames Tideway Tunnel, Imaginaries, Narratives, Historical Institutionalism, Path Dependencies

Word count

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Introduction

In March 2024, a 1,200t concrete lid was craned into place, capping off the last of the Thames Tideway Tunnel's construction, London's new "super sewer"¹. This £5 billion, 25km long, 7.2m wide concrete tunnel aims to catch the overflow of sewage that occurs when heavy rainfall hits London, and prevent it from entering the capital's rivers. But sewage overflow in the Thames is still expected to happen up to five days a year, or around 2.6 million cubic metres, according to 2011 estimates.² With an ever-growing population, and the intensification of weather events due to climate change, is this sewer already out of date? Should we not be thinking more circularly, and start valuing all kinds of water again, instead of carting it off as far and as fast as possible outside of the city in pipes? Tideway's CEO Andy Mitchell seems to agree:

*"What we've done is bought London time. Fifty, sixty, seventy years to do something more intelligent with rainwater than simply mix it with sewage."*³

However, to date, no major plans have been put in place to rethink the way London manages its water⁴. If the limitations of this expensive solution are so evident, then how did we get here?

Brief Historical Overview of Sewage in London

Before the 1850s, human waste in London was directed to communal cesspools which were emptied biannually, and the remaining solid waste used as agricultural fertilizer⁵. Sewers at street level carried rain and ground water down to the River Thames. The popularisation of the water closet and the ban of cesspools in the mid-18th Century, meant that rapidly all London's human waste was directed to the street sewers, and flushed straight into the Thames, then still a source of domestic water for most of London.⁶

London suffered multiple deadly cholera outbreaks throughout the century. Despite growing concerns and calls for sanitation reform, no concrete action was taken by government until the Great Stink of July 1858, when the smell of the Thames got so horrible, the government passed in a record breaking 18 days a bill to spend a fortune on a large-scale plan⁷. Joseph Bazalgette was appointed head engineer, works started in 1859, and his sewage system was complete by the mid-1870s.

The innovative network of egg-shaped brick pipes uses gravity and pumping stations to draw out the sewage and lead it to treatment works and out to sea, east of the city. These works created the iconic embankments on the river Thames, and other public works. This 'feat of Victorian engineering' is subject of national pride and acclamation to this day.⁸

Bazalgette designed his system to serve a population of four million—twice the size of London at the time. While it has held up remarkably well, London's population has since more than tripled, and by the early 2000s, frequent sewage overflows into the Thames were alarming⁹. The government set up a commission to study and propose a solution in 2000. Despite significant

¹ Johnson (2024) Underground construction of London's £4.5bn Tideway super sewer complete.

² BBC News (2023) A vision of a greener future: The London super sewer

³ BBC News (2023) A vision of a greener future: The London super sewer

⁴ The 2021 London Plan has a section dedicated to Sustainable Urban Drainage Systems but stays in the realm of recommendations and information for developers, no legal obligation or strategic timely goals for the capital in terms of SUDS.

⁵ Jackson, L. (2014) *Dirty Old London: The Victorian Fight Against Filth*

⁶ Cook. (2002) Construction of London's Victorian sewers: the vital role of Joseph Bazalgette

⁷ Whistler, S [Megaprojects]. (2022, March 24). *The Incredible Story of London Sewers*

⁸ Historic London Tours. (n.d.). *The sewer king*

⁹ Jeffries (2014) Water, super-sewers and the filth threatening the River Thames

criticism of these studies—including their narrow, single-issue focus, lack of transparency, uncertainty in anticipatory modelling, and the absence of comprehensive carbon assessments or analysis of wider benefits¹⁰—and despite public controversy surrounding the project's environmental and financial costs, as well as growing support for alternative, greener approaches such as smaller tunnels and widespread Sustainable Urban Drainage Systems (SUDS)^{11 12}...

Ultimately, the chosen option was the Thames Tideway Tunnel. A 25km long sewage overflow-catchment tunnel to be dug mostly underneath the river Thames. While this megaproject hosts innovations in its own right, the very nature of the solution adopted is the same as 150 years ago: a bigger, wider pipe, out of concrete instead of brick, designed to carry waste away from the city.

Question and Angle

Why was this centralised, large-scale, highly-engineering solution favoured, and other solutions dismissed? This thesis explores the impact of *hero narratives* and *imaginaries* surrounding Sir Joseph Bazalgette and London's Victorian sewage system, as well as *sociotechnical imaginaries* surrounding large-scale engineering works, to identify their impact on the legitimization of the Thames Tideway Tunnel (TTT) as the only 'common sense' solution to sewage overflow in London.

Structure of the thesis

This thesis has already briefly outlined the historical development of London's sewage system. In Section I, it examines the cultural and symbolic legacy of Bazalgette, exploring how his figure has been mythologised and used to legitimise the Thames Tideway Tunnel (TTT). Section II applies the frameworks of sociotechnical imaginaries and historical institutionalism to analyse how engineering ideologies, institutional cultures, and financial models contribute to the perception of the TTT as a 'common sense' solution. By tracing these imaginaries, narratives and institutional continuities, the thesis offers a critical lens on how we imagine the future of infrastructure and legitimise our beliefs. The conclusion reflects on the broader implications of this analysis for urban infrastructure decision-making in the 21st century.

¹⁰ Ashley (2012) The role of the civil engineer in society: engineering ethics and major projects

¹¹ Stovin et al. (2013). The potential to retrofit sustainable drainage systems to address combined sewer overflow discharges in the Thames Tideway catchment.

¹² Watling et al. (2012). Axe supersewer and adopt my greener plan, says US expert.

Literature Review

World History of Sewage

A few publications have attempted to summarise the global history of sewage. Cooper (2001)¹³ writes as a wastewater engineer, De Feo et al. (2014)¹⁴ are multi-disciplinary team, both provide similar overviews. London is consistently given a lot of attention, as it was one of the first cities to industrialise. Halliday's (2019)¹⁵ "coffee table book"¹⁶ focuses on Paris and London's sewers within a broader look at engineering milestones explaining how these were exported to the rest of the world.

London's Sewage History

Halliday (1999)¹⁷ is also frequently referenced for its description of the event and England's 19th century. Jackson (2014)¹⁸ gives an account of sanitation issues and reforms in Victorian London. London's sewage history is also the subject of many blogs and press articles, posting informative and easy to read "did-you knows" about the history of the city, or commemorations on anniversaries of Bazalgette.¹⁹

London's Sewage in Medical and Engineering Journals

Medical journals often cite Bazalgette's work as exemplary. Brewer et al. (2015)²⁰, implicitly, and Cook (2005)²¹, explicitly, frame it as a model for today's developing nations. Engineering publications focus on technical advancements of the TTT, celebrating its tunnel-boring innovation and health and safety program.

Thames Tideway: a case study in Finance and Governance

Contemporary textbooks from various disciplines have the Thames Tideway Tunnel (TTT) as a case study. Bunce et al. (2020)²² frame the TTT as an example of how mega-infrastructure is entangled with neoliberal governance and contested urban futures. Clifford and Morphet, (2023)²³ use the TTT to highlight the shift toward risk-managed delivery models in UK infrastructure policy. Mittal et al. (2022)²⁴ discuss the TTT in relation to hybrid public-private partnership models.

A few articles study the TTT specifically. Byatt (2017),²⁵ reviewing 25 years of water regulation in England and Wales, critiques the project for failing to properly appraise alternatives and tellingly, is mentioned in the chapter titled "Problems of Capital-Base Regulation." Loftus and March (2019) also lament the entry of finance into infrastructure provision, arguing that the financial model is focused on extraction of rents from consumers and criticises the TTT as

¹³ Cooper (2001) Historical aspects of wastewater treatment

¹⁴ De Feo et al. (2014) The historical development of sewers worldwide.

¹⁵ Halliday (2019) An Underground Guide to Sewers, or: Down, Through & Out in Paris, London

¹⁶ Williams (2020) An Underground Guide to Sewers (review)

¹⁷ Halliday (1999) The great stink of London: Sir Joseph Bazalgette and the cleansing of the Victorian metropolis

¹⁸ Jackson, L. (2014) Dirty Old London: *The Victorian Fight Against Filth*

¹⁹ For example, see: Banerjee (2007), Captain JP's Log (2017), Historic London Tours. (n.d.)

²⁰ Brewer et al. (2015). Beyond Bazalgette: 150 years of sanitation.

²¹ Cook (2005). What can the Third World learn from the health improvements of Victorian Britain?

²² Bunce et al. (2020) Critical dialogues of urban governance, development and activism: London and Toronto

²³ Clifford & Morphet (2023) Major infrastructure planning and delivery: Exploring nationally significant infrastructure projects (NSIPs) in England and Wales.

²⁴ Mittal, Gupta, & Arora (2022) Hybrid Annuity Model (HAM) of Hybrid Public-Private Partnership Projects

²⁵ Byatt (2017) Water regulation in England and Wales: A review of 25 years

having a “*disregard for the water-energy nexus*”²⁶. Findeisenn (2023)²⁷ has a more neutral assessment, focusing on how the state and market finance worked together.

Lastly, Grafe and Hilbrandt (2019)²⁸ study the different temporalities of financialization in large-scale projects like these. Their conclusion agrees with Byatt and Loftus & March, “*the temporal characteristics of finance have repercussions in the urban space that privilege financial interests*”.

Thames Tideway in the Press

A lot of the press praises the project and makes strong comparisons to Bazalgette’s system²⁹. Some articles present balanced views: saying that alternatives are possible, and criticising the various impacts of the TTT, but concluding that due to time constraints the TTT was the most cost and time effective option.³⁰ Some articles present the opposition to the TTT more strongly, both the ecological, economic, or local disruption arguments, giving voice to citizen groups too.³¹

Path Dependence and Historical Institutionalism

The theory of historical institutionalism (HI) is an approach considering how institutions develop and shape social, political, and economic outcomes. It values the importance of historical context in understanding change and stability. It became prominent in the 1980s in political science and sociology but, as writes Andre Sorenson (2014)³², it is rarely used in planning and infrastructure. Part of a historical institutionalist approach, path dependence is the phenomenon where decisions or outcomes in the present are strongly shaped by past actions or choices, despite the availability of perhaps better alternatives for choices. The name stems from the fact that once a certain “path” is taken, it can be hard to change direction. It was coined by economist Paul David, who popularized the concept in the 1980s³³.

Sorensen argues that concepts like path dependence and critical junctures are underutilized in planning history. He explains that urban planning institutions have a profound effect on cities, shaping decisions and governance, and are able to resist or enable change due to political coalitions and vested interests. Institutions often create positive feedback loops and make change slow and difficult. Sorensen, and Booth³⁴ before him, make the case for a historical institutionalist approach in urban planning because it allows for a new, more complete comparative lens, one based on systemic and structural differences between cities.

Imaginaries and Narratives

In Kovacic, Strand, and Völker’s *The Circular Economy in Europe, Critical Perspectives and Imaginaries* (2020), the chapter 6 focuses on the creation of an imaginary of circularity, its evidence in the policy documents of the European Commission, and the consequences this has on the EU’s circular economy policy. They define the term “sociotechnical imaginaries” as collectively held, institutionally stabilized visions of desirable futures. In the case of circularity in the EU, the authors identify a techno-optimistic vision of the future which limits the scope of

²⁶ Loftus and March (2019)

²⁷ Findeisenn (2023) Financing urban infrastructure: State and market in collaboration

²⁸ Grafe & Hilbrandt (2019) The temporalities of urban financialization: A study of large infrastructure projects

²⁹ Smith (2016) Flushed away: London's super sewer gets the green light.

³⁰ Fisher (2024) Thames Tideway Tunnel super sewer complete

³¹ Thomas (2011) Thames Water statement on damning Thames Tunnel report.

³² Sorensen (2014) Taking path dependence seriously

³³ David (1985) Clio and the Economics of QWERTY.

³⁴ Booth (2011). Culture, planning and path dependence: some reflections on the problems of comparison.

change envisioned. This chapter shows how sociotechnical imaginaries, and collectively imagined futures influence present day governance and policy, often sub-consciously used to legitimize them.

Research gap

In this breadth of literature, I have found limited work that combines a cultural analysis of imaginaries and narratives, with institutional critique in a specific project case, and I thought it was an interesting lens to study the advent of the Thames Tideway Tunnel. This thesis combines the concepts of path dependencies from Sorenson (2014) and that of sociotechnical imaginaries from Kovacic et al. (2020) to examine how they interact to shape contemporary urban infrastructure.

I. Bazalgette's Symbolic Power

This section examines how Joseph Bazalgette has been memorialised in the cultural and physical landscape of London, and how this contributes to the legitimisation of the Thames Tideway Tunnel.

A hero memorialised

There is no denying that when writing about sewage in London, Sir. Joseph Bazalgette is almost always the main character. While some independent history blogs, biographers, and historians dive deep into the work of predecessors³⁵, refused plans³⁶, and failed attempts at calls for sanitary reform, this takes the backstage compared to Sir Joseph Bazalgette's name, by far the most prominent. Titles of articles, and often title of the chapters in the key books on the topic of sewage bear his name.³⁷ In fact, Bazalgette's name seems to stand for the whole endeavour, and I myself use it as a short-hand for the 19th Century sewage system. As tends to happen when relating historical events, it is useful for the sake of the clarity to cite only one key author, instead of the complex realities of multiple contributors leading up to an accomplishment. This inevitable simplification of history reinforces the myth of the man, the hero of a particular historical deed.³⁸

Bazalgette's was knighted by the monarch in 1875, with the addition of 'Sir' to his name. Multiple sources also nickname Sir Joseph Bazalgette, "the Sewer King". The episode of the BBC dramatized documentary series *the Seven Wonders of the Industrial World*, re-enacts the historical context leading to, and the creation of the London's first underground sewage system, and is titled "Sewer King" in reference to Bazalgette³⁹. This name is also taken up by writers of blogs on London history^{40,41}. This kind of regal language demonstrates just how highly memorialised he is remembered as a figure of national pride, or even a civic saviour.

Another narrative contributing to the mythical man, is one akin to the tortured artist trope. Deborah Cadbury, producer of the aforementioned docu-series (and book of the same name) says Bazalgette "*drove himself to the limits of endurance as he struggled to realise his*

³⁵ O'Rourke (2024) John Martin and the Art of Infrastructure.

Here, credit is given to the plans of John Martin, who arguably influenced Bazalgette's vision for the new London embankments.

³⁶ Captain JP's Log (2017) Bazalgette's sewer system

³⁷ Halliday (2019) *An Underground Guide to Sewers*

³⁸ One can draw a parallel with Haussmann's Paris, although the latter's name is even more widespread because of its association to the architectural style, and Parisian grandeur.

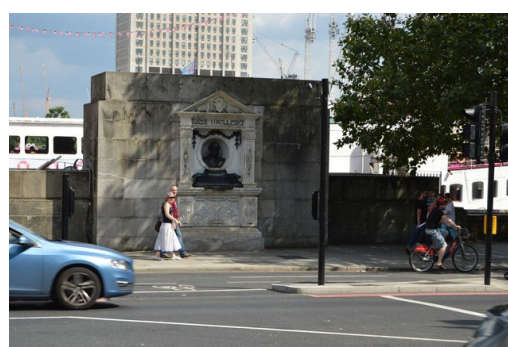
³⁹ Bazalgette (2003) *The Sewer King*, in Cadbury (2003) *Seven Wonders of the Industrial World*.

⁴⁰ Historic London Tours (n.d.). *The Sewer King*

⁴¹ Captain JP's Log (2017) *Bazalgette's sewer system*

subterranean vision”⁴² The London Museum also writes of “a tireless manager, obsessed with every detail of his work”⁴³. This dramatic recounting of Bazalgette’s life further portrays him as a hero worthy of a novel. Despite harsh criticism faced during his lifetime⁴⁴ is it in this heroic light that Bazalgette is remembered.

While the subterranean sewers are invisible, the most striking part of Bazalgette’s work for Londoners to this day are the embankments. It is no surprise that this was the chosen location for the Bazalgette Memorial, opened in 1901⁴⁵, 10 years after his death. The inscription above his bust in Latin reads “He put the river in chains”.⁴⁶ Joseph Bazalgette is also memorialised in public space via a Greater London Council blue plaque at his former residence. This plaque was erected in 1974, showing how Bazalgette was still at the forefront of Londoner’s mind a century later.



Memorial to Sir Joseph Bazalgette, London.
Photo: J. Bennett via Wikimedia Commons
<https://commons.wikimedia.org/w/index.php?curid=27031982>

Memorial to Sir Joseph Bazalgette, Embankment Pier (from Northumberland Avenue), London. Photo by N Chadwick, via Wikimedia Commons <https://commons.wikimedia.org/w/index.php?curid=136420474>

This symbolic elevation of Bazalgette—from engineer to knight, from public servant to “Sewer King”, shows how infrastructure history is often told through the lens of heroic individualism. Bazalgette’s legacy is kept alive not only in history books but physically in the urban landscape itself. He has become a mythic ideal of what it means to “save the city”. I will now explore how this cultural reference point is used to legitimize its Thames Tideway project.

⁴² Cadbury (2011) *Seven Wonders of the Industrial World*. BBC

⁴³ Collinson (n.d.) How Bazalgette built London's first super-sewer.

⁴⁴ Historic London Tours (n.d.). *The Sewer King*

⁴⁵ Banerjee (2007) Memorial to Sir Joseph Bazalgette

⁴⁶ Banerjee (2007) Memorial to Sir Joseph Bazalgette,

Bazalgette's legacy in the TTT, legitimization processes

Tideway, the company “financing, building, maintaining and operating the Thames Tideway Tunnel”⁴⁷ is the trading name of Bazalgette Tunnel Limited, an original name which pays tribute to the man. The press constantly draws direct comparisons between the two works: *Water Magazine* highlights how “The Thames super sewer project creates ‘new land’ just as Bazalgette did.”⁴⁸ One of these new pieces of land, is a public space to be named the Bazalgette Embankment.⁴⁹ This gesture is not neutral, naming new urban infrastructure after Bazalgette embeds his legacy directly into the modern landscape. It frames the TTT not just as a solution, but as an homage to the Victorian success story.

In Tideway’s official legacy brochure, the project is directly positioned as a successor to Bazalgette’s 19th-century achievements; “It’s time to pick up the baton from Bazalgette”. This framing suggests a deliberate effort to align the TTT with Bazalgette’s legacy, thereby legitimizing the project by associating it with a historical figure renowned for revolutionizing London’s sanitation.

London's Victorian sewer system is a triumph of engineering that has served us well for 150 years

In fact, it's still the heart of our sewerage infrastructure, even today. But London is far bigger, city now than it was in Victorian times and it's time to ensure future generations of London can enjoy a cleaner, healthier River Thames.

Originally designed for 1.5 million people, the system would overflow into the river only once a year, once every 100 years or so. Now, about eight million people live in London and over 100,000 cars are on the roads just about every week. In 2015, the sewage overflow topped 55 million tonnes. This is why the average annual figure of 58 million tonnes and the work to build a new sewerage system is being done.

Thames Tideway Tunnel is the major new sewer that will help prevent unnecessary pollution in the Thames.

The £4.2bn, 25km (15 mile) super-sewer is the deepest and longest ever constructed in London. During construction there'll be 24 construction sites, from Acton in the west to Abbey Mills in Stratford in the east.

Between 2015 and 2023, construction work here will create thousands of job opportunities – especially for local residents. Working on the project is your chance to be part of a career, healthier future, for both the river and those who enjoy boating, working or living nearby.

Underground hero

Sir Joseph Bazalgette was the visionary Victorian engineer behind London's sewerage system. He designed the sewers following the Great Stink of 1858 when the stench from the river just about brought London to a standstill. His sewers are made up of 318 million bricks, all laid by hand.

Next time you walk down the Embankment, see if you can find the memorial to Sir Joseph, celebrating the Thames near the new Golden Jubilee bridges.

Thames Tideway Tunnel will build on Sir Joseph's great legacy, protecting the Thames for the next 100 years.

Thames Tideway Tunnel: 5
Our cleaner river, your great opportunity

The Engineering 6
Constructing your future 8
Be part of the team 11
Get involved 12
Science, technology, engineering and maths in action 14
Build your career in construction 16
Questions answered 18
Want to know more? 19

Get involved
This brochure tells you more about construction opportunities on Thames Tideway Tunnel

Extract from a 2009 Construction Industry Training Board (CIBT) brochure: *Constructing a Healthier London*. Advertising possible careers in construction of the Thames Tideway Tunnel

Even articles and books that focus on history, mention the TTT as the next natural development. Historic England’s website article on The Great Stink, ends the historic discussion with a comparison with a “future legacy” paragraph saying that “*The mission of the Thames Tideway Scheme echoes that of Sir Joseph Bazalgette over 160 years earlier*”. The chapter on the future of waste treatment, in Halliday’s *An Underground Guide to Sewers*, focuses almost solely on the TTT. In her review of the book, Williams (2020)⁵⁰ offers a critical lens, saying she is not surprised that an author with “a particular interest in Victorian London and in the engineers who made nineteenth-century cities safe and habitable” would regard only the large-scale, tunnel intervention as worthy. The section focuses on megaprojects of Tokyo, New York, and London,

⁴⁷ Tideway (n.d.) About Us- The Organisation

⁴⁸ Water Magazine (2022) Thames super sewer project creates ‘new land’ just as Bazalgette did.

⁴⁹ Tideway (2020) New land built in the River Thames to be named ‘Bazalgette Embankment’

⁵⁰ Williams (2020) *An Underground Guide to Sewers* (review)

and mentions a wide range of technologies for waterless toilets, or treatment solutions best suited for small towns with plenty of available land, but it doesn't mention the applicability of greener SUDs solution in large cities, such as Philadelphia's "Green City, Clean Waters"⁵¹ initiative. Halliday's book shows how the TTT fits neatly into the established narrative.

Conclusion

This section has shown that Sir Joseph Bazalgette is not only highly regarded, but culturally mythologised, his name is synonymous with Victorian innovation and the triumph of engineering over crisis. This "cult of Bazalgette"⁵² happens both in academic and popular sources, and is embedded physically in the city. This symbolic weight is drawn upon in official project documents, literature, and press coverage, framing the TTT as the modern version of Bazalgette's vision. This framing subtly justifies such large-scale interventions, not just as effective solutions, but as a form of infrastructural destiny. This brings us to Part II, where I look at imaginaries surrounding not just the man, but wider imaginaries and institutional logics underpinning large-scale engineering.

II. Engineering Ideals and Historical Institutionalism

Victorian ideals of engineering

First, I argue that by harking back to Bazalgette and his sewage legacy, one unconsciously also harks back to Victorian ideals of engineering. Ashley (2020) says that the function and ethical mission of civil engineering is changing. This is highlighted in definition change by the Institution of Civil Engineers (ICE) – of which Bazalgette was president from 1882–1884⁵³. From '*directing the great forces of nature for the benefit of mankind*', the definition was changed in 2007 to include '*work with the great sources of power in nature for the wealth and well-being of the whole of society*'⁵⁴. But Ashley argues that practices are slow to catch up, lamenting the continued dominance of outdated models.

*"In the past, large infrastructural schemes were appropriate in which 'big' engineering converted natural resources into useful artefacts and services. Now, minimisation of the use of resources is essential as is reduction of emissions of any sort."*⁵⁵

Some authors go even further, arguing that engineering achievements in the Victorian era were not only technical milestones, but also expressions of masculine identity and national superiority⁵⁶. "*He put the river in chains*," reads the inscription under the Bazalgette memorial,⁵⁷ epitomizing this attitude. As shown in Part 1, Bazalgette is consistently invoked to legitimize the Thames Tideway Tunnel, I argue that it is not just the man being celebrated, but the approach he represents, and an ideal of what engineering should look like today.

These views are cemented in institutions

Ashley (2012) argues that the views and values of civil engineers are cemented in their institutions, and that these support outdated governance structures that hinder changes in practice. What Ashley describes as "Institutional lock-in" and "technological entrapment", is a historical institutionalist approach. He argues that institutional cultures in the water industry

⁵¹ Ashley (2012) The role of the civil engineer in society: engineering ethics and major projects

⁵² Hidden Hydrology (2017) Sennett - The cult of Bazalgette.

⁵³ Watson, G. (1988). The civils: The Story of the Institution of Civil Engineers

⁵⁴ Ashley (2012) The role of the civil engineer in society: engineering ethics and major projects

⁵⁵ Ashley (2012) The role of the civil engineer in society: engineering ethics and major projects

⁵⁶ Tosh (2005), Masculinities in an Industrializing Society: Britain, 1800–1914.

⁵⁷ Banerjee (2007) Memorial to Sir Joseph Bazalgette.

reinforce their own views of a “common-sense” approach. One that is not sensible at all, since the premise of the projects are not questioned. He points out that planning tools like the National Planning Policy Framework (NPPF) in England have streamlined decision making processes and therefore reduce opportunities for open-ended questioning or fundamental reconsideration of a project’s purpose.⁵⁸ Whether it be the ICE, the Environmental Agency, or the government’s NPPF, this fits with what Sorenson’s (2014) says: institutions matter deeply in cities, they can resist or enable change.⁵⁹

Which create path dependencies

Sorenson’s concept of path dependence can be applied to the kind of massive engineering projects England has been producing in past years. CEO of Tideway, Andy Mitchell, vaunts that there is a continuity of skills between the Crossrail project and the TTT, which made it easier to implement it.⁶⁰ Because these large-scale infrastructure projects are of similar scale and both digging tunnels under London, there is a continuity of skills and workforce. This creates path dependencies that create positive feedback loops⁶¹ in which similar decisions are easier to make, and departing from then is difficult. Mitchell argues that this is a positive for the country’s economy; “*you can really reap benefits if you can keep that momentum of big similar works going*.”⁶² But therein stems the issue: following the momentum of these big projects without fundamentally questioning their need and examining the totality of benefits, not just the ease of implementation, or the economic benefits, but a wider assessment of long term goals and needs of the country’s needs.

The TTT as a common-sense solution

These factors, historical framing and professional norms embedded in institutional culture, contribute to the Thames Tideway Tunnel being presented as the only *sensible* option, a “common sense approach”⁶³. Tideway CEO Andy Mitchell has stated “*Certainly what we have been tied by is that a recognition that if we are facing really big problems sometimes you just need really big solutions like Tideway,*” adding, “*There was no easy way of creating the volume solution so we did what we did.*”⁶⁴ These comments are remarkably simplistic and suggest inevitability. Scale is invoked to imply that only big solutions, ie. centralised massive engineering works, can tackle big problems, ie. complex urban challenges. Sure, there was no easy way of solving this problem, Ashley himself also acknowledges the immense complexity of the alternative ‘green’ solutions, but these have proven successful elsewhere⁶⁵. To suggest there was “no easy way” is to say there was no *other* way, and therefore the TTT is made to appear as the obvious answer.

Impact of private financial actors

The financial cost of the project is also justified through similar calls of “there is no other way”. In an article from 2014, the great-great grandson of Joseph Bazalgette, Peter Bazalgette says: “*We need massive investment in our infrastructure and there’s no appetite to do that from general taxation. But these major public works need to be done. The Victorians knew that.*”⁶⁶ This leads us to my next point: Financial structures play a key role in reinforcing the dominance of large-scale infrastructure solutions.

⁵⁸ Ashley (2012) The role of the civil engineer in society: engineering ethics and major projects

⁵⁹ Sorenson (2015) Taking path dependence seriously

⁶⁰ Johnson (2024) ‘There’s never been a better time to build Tideway’

⁶¹ Sorenson (2015) Taking path dependence seriously

⁶² Johnson (2024) ‘There’s never been a better time to build Tideway’

⁶³ Ashley (2012) The role of the civil engineer in society: engineering ethics and major projects

⁶⁴ Johnson (2024) ‘There’s never been a better time to build Tideway’

⁶⁵ Ashley (2012) The role of the civil engineer in society: engineering ethics and major projects

⁶⁶ Jeffries (2014) Water, super-sewers and the filth threatening the River Thames

The Thames Tideway Tunnel is financed through a Regulated Asset Base (RAB) model, which guarantees investors returns through consumer water bills, regardless of cost overruns⁶⁷. Ashley (2012) explains that such projects are often praised for providing increased asset value, capitalisation, profits to bank owners and present minimal financial risk to investors⁶⁸. Loftus and March (2019) lament this financial model and explain that the privatization of infrastructure provision in the 1980s opened the door to financial actors whose interests rarely align with, decentralised, community-scale solutions.⁶⁹ Because of this a feedback loop emerges: megaprojects are favoured because they are fundable by private finance, appearing as the only viable options. and alternatives are further discredited.

Techno-optimistic views and the capitalist status quo

To conclude this section, I draw a parallel with arguments made by Kovacic et al. (2020) in their analysis of the circular economy in Europe. They point out that the EU promotes a techno-optimistic narrative, that *“suggests a gradual, market-friendly shift, reinforcing existing systems rather than challenging them”* then arguing that *“this results in a vision of circularity that appears ambitious but might ultimately be superficial”*⁷⁰. Techno-optimistic perspectives embrace technological innovation and sustainability only as long as it does not challenge growth, market logic, or centralized control. This view aligns with the Victorian ideals of engineering, it is reinforced by institutional norms, and sustained by financial models, and ultimately serves to maintain the capitalist status quo.

I argue that in the case of the TTT, the government, investors, and engineers are also committed to this techno-optimistic worldview. One that underpins all the imaginaries surrounding Bazalgette, his sewer system, and broader notions of what civil engineering is.

Conclusion

This thesis set out to examine why, in the face of known limitations and alternative options, London chose a massive concrete tunnel to address its sewage overflow problem. By tracing the cultural legacy of Joseph Bazalgette and the engineering values he represents, I have shown how narratives of heroism, technical mastery, and infrastructural destiny continue to shape perceptions of what a legitimate solution is.

Through the lenses of historical institutionalism and sociotechnical imaginaries, this thesis uncovered how institutional “locking-in”, professional cultures, and private financing models reinforce each other, making alternatives appear unviable or too complex. The Thames Tideway Tunnel in this sense was not merely a technical project, but as a symbolic one, reproducing Victorian engineering ideals the 21st Century London.

As London moves toward a projected population of 10 million by 2031, it is critical to rethink the path dependencies embedded in infrastructure provision. Planning needs to move beyond the binary of ‘small equals naïve’ and ‘big equals rational.’ In the interest of circularity, we must redefine what is considered ‘common sense’. This is not to deny the necessity of future megaprojects, but to argue for a more reflective, democratic infrastructure planning. Lastly, this challenge is also a cultural one: we need to reimagine our views of water, waste, and how we live with the environment, to avoid getting stuck in the past.

⁶⁷ Mittal et al. (2022). Hybrid Annuity Model (HAM) of Hybrid Public-Private Partnership Projects

⁶⁸ Ashley (2012) The role of the civil engineer in society: engineering ethics and major projects

⁶⁹ Loftus and March (2019) Integrating what and for whom? financialisation and the thames tideway tunnel

⁷⁰ Kovacic et al. (2020) The circular economy in Europe

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