Special Issue: Google, a major stakeholder in local governance?

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Google urbanism 2010–2020: From infrastructural control to growing bit by bit

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Abstract

This article examines Google's political-economic influence in the emerging 'digital growth machine' through two urban-tech initiatives, Fiber and Sidewalk Labs. The findings highlight the company's dual role as both a platform and an infrastructure, its capacity for collaboration with local governments and its iterative, experimental use of urban environments. It argues that Google's urban-tech power in cities is neither fixed nor easily defined; the company purposefully remains ambiguous in order to continually test and invest in new ventures, fuelled by the speculative ethos of Silicon Valley and the demands of venture capital. Using Google as a case study, the article calls for a broader theorisation of tech power in cities, focusing not just on economic heft but also on the ways that tech companies enlist other actors in speculative projects, and adapt, pivot and repurpose their products in response to local demands.

Keywords

infrastructure, local government, platform urbanism, Sidewalk Labs, smart cities

摘要

本文通过两项城市科技计划 Fiber 和 Sidewalk Labs 来探讨谷歌在新兴“数字增长机器”中的政治经济影响力。研究结果凸显了谷歌作为平台和基础设施的双重角色、其与本地政府合作的能力，以及其对城市环境的迭代性和实验性使用。本文认为，在城市中，谷歌的城市科技影响力是不固定的，也很难被定义。谷歌故意让其保持模糊性，以便不断测试和投资新项目。该公司这样做也是受到硅谷投机精神和风险资本需求的推动。本文以谷歌为例，呼吁对科技公司在城市中的科技影响力进行更广泛的理论化，不仅关注其经济实力，还要关注科技公司招募其他参与者参与投机项目的方式，以及其如何根据本地需求调整、转型并重新定位产品。

关键词

基础设施、地方政府、平台城市化、Sidewalk Labs、智慧城市

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Introduction

Originally a software and advertising company, Google – now Alphabet – has evolved into a vast conglomerate operating across diverse domains over the past two decades. Among others, cities have emerged as a relatively new site for the company to test new businesses, pursue investment strategies and engage in local politics. This article examines two emblematic cases of Google's 'spatial fix', to borrow Harvey's (1982) concept, in which the tech giant tried to exploit new or under-explored urban areas for data extraction and capital accumulation. I use the term 'Google Urbanism' to distinguish the company's experimental city-centric projects, Google Fiber and Sidewalk Labs, and discuss what kind of political-economic capacity Google tried to build in urban environments via these two initiatives.

Google Fiber is the company's internet service in the United States, launched circa 2010 as a trial project in select cities. It was presented as a bold initiative, promising to upend how cities thought about connectivity. Five years later, in 2015, the company introduced Sidewalk Labs, a start-up devoted to 'urban innovation' and using new technologies to remake urban life. Both projects were launched with much fanfare, and their potential was hyped as transformative. But they also presented distinct characteristics in terms of investment strategies, partnerships with local governments and civic groups and broader conceptualisation of the city.

By comparatively examining Google Fiber and Sidewalk Labs between 2010 and 2020, I argue that Google's emerging role and influence in the so-called 'innovation complex' (Zukin, 2020) is neither fixed nor easily defined. Operating as both a platform and an infrastructure provider, Google treated the city as a testbed, pursuing multifaceted, sometimes contradictory, strategies, shaped by the overlapping pressures of municipal needs and its own corporate ambitions. The company's interventions, though experimental, relied heavily on the active participation of local governments and civic organisations – collaborations that gave Google the access and legitimacy it needed to push these projects forward. By unpacking the adaptability and expansive reach that constitute Google's urban-tech power, this article aims to contribute to the literature theorising contemporary cities via the lens of 'digital growth machines' (Rosen and Alvarez León, 2022). It calls for a more complex understanding of the influence of tech companies beyond their economic heft.

To illustrate how Google frames its experimental urban initiatives by strategically leveraging its platform and infrastructure capabilities, I first present Google Fiber as a case of digital growth via *infrastructural control*, which refers to Google's investment in physical internet infrastructure at the city level and its significant political influence over municipalities. By relying on the powerful brand name of Google, Fiber gained exceptional leeway in launching this new broadband service in the early 2010s. The company demanded dedicated municipal teams to support its ground operations and positioned city officials as the company's de facto spokespeople – especially in the face of public setbacks.

In contrast, I discuss Sidewalk Labs as an example of digital growth *bit by bit*, which refers to Google's attempts to view the city as akin to a platform and to extract value by capturing data on urban movements, municipal operations and the consumption patterns of residents. Just like Fiber, Sidewalk Labs pursued testbed urbanism (Baykurt, 2019; Halpern et al., 2013), but one characterised by the start-up logics of incremental and vertical growth, and by trying to generate new revenue streams from existing municipal services and data. Unlike Fiber, Sidewalk Labs deliberately downplayed

Google branding while pursuing more traditional public–private partnerships with local governments to receive public subsidies and share revenues.

Across these two cases, the article theorises Google's forays into the digital growth machine not as a monolithic or stable construct but as a series of investments in local infrastructures and tethering municipal services to its code and analytics. Google, it appears, is less a cohesive strategist and more a shapeshifter as it continually used cities as testing grounds. In the rest of the article, I first examine the existing body of work around urban-tech growth, which often defines tech companies predominantly in terms of their economic capital. Such accounts, however, overlook the subtler, more fragmented ways companies like Google try to embed themselves into urban environments. I then discuss what kind of an urban-tech actor Google is, especially in relation to other tech companies, not to mention the so-called Big Tech. The cases of Fiber and Sidewalk Labs demonstrate how Google oscillates between being an infrastructure and leveraging platform capabilities while also strategically mobilising and obfuscating its Big Tech status when necessary. I conclude the article by discussing that the incoherence and obscurity of Google's urban-tech efforts explain more about *the* strategy rather than trying to isolate why Google pursues which projects. What matters most to Google is to be able to continually test and invest in new ideas, fuelled by the speculative ethos of Silicon Valley.

Datafication meets the growth machine

After the 2008 Great Recession, unlike other industries, the tech sector surged, buoyed by waves of capital seeking new ideas to invest. Cities, with their dense infrastructures, emerged as a potential ground for this money. Tech companies began remaking the urban landscape – not just through the construction of sleek office buildings, data centres and warehouses (Carr and Hesse, 2022; Edwards et al., 2024; Mayer, 2021; Schmahmann et al., 2024), but also by trying to upend the conventional structures of capital and labour in housing, public transit, logistics and municipal services (Baykurt, 2019; Fields, 2023; Wells et al., 2023).

Sociologist Sharon Zukin (2021) describes tech's new faith in cities as the 'urban-tech economy', a tidy shorthand for an alliance between local governments and tech firms under the banner of innovation. While Zukin focuses on New York City, where tech, finance and real estate interests rebranded swathes of the city as innovation districts, the refrain of the urban-tech economy extends beyond a single place. The blueprint – celebrate innovation, reconfigure space, extract value – has been circulated across several cities around the globe, stretching from world capitals to mid-sized hubs eager for relevance (Baykurt and Raetzsch, 2020; Parkar et al., 2023; Wiig, 2015).

The tech industry's growing presence in cities also signalled a shift towards a new form of value creation, one where cities became legible through 'digital renderings' – gridded and quantified to fit the logic of profit (Rosen and Alvarez León, 2022: 2258). From automating evictions (McElroy and Vergerio, 2022) to mapping economic flows (Luque-Ayala and Neves Maia, 2019) to reshaping the reputational currency of small businesses (Moy and Bui, 2023), a new 'platform urbanism' has emerged, which pairs well with 'smart urbanism', a term for the ways local governments adopt tech tools to monitor and manage cities in the name of efficiency (Sadowski, 2020; Wiig, 2015). In both cases, there is a similar pattern: digital technologies extract vast amounts of data from the built environment and urban movements, repurposing it to

optimise cities for capital. Urban spaces and infrastructures are recast as assets, eventually monopolised by the tech industry (Rosen and Alvarez León, 2022).

In the fields of geography and urban studies, the rise of tech companies in local governance has prompted scholars to revisit the 'growth machine', the framework developed by sociologist Harvey Molotch (Logan and Molotch, 2007; Molotch, 1976) to explain development and growth coalitions in cities. Now reframed as a 'digital growth machine' (Rosen and Alvarez León, 2022) and building on a similar observation of Zukin's 'innovation complex' (Zukin, 2021), the updated model not only reflects tech's cultural, economic and political dominance in cities but also spotlights how urban elites – developers, policymakers and civic leaders – facilitate, or align their interests with, the relentless expansion of the tech industry's urban footprint. While this literature sheds much-needed critical light on the role of tech in local governance, it also raises new questions about what distinguishes tech-led urban growth from previous models, and what its specificities are across time, place and even companies.

Particularly in the United States, where local governments have long blended public and private resources to manage cities, what kind of power does the tech industry project in local governance? How does this manifest across different regions and over time? Are the strategies of tech companies consistent, whether between firms or even within one company? And does the tech industry's imprint vary across different domains of urban life – public health versus transportation, for instance? While this article cannot answer all these questions, I focus on Google and its urban-tech initiatives to analyse the seemingly coherent power of a tech giant in cities and what kind of evolving strategies and even contradictions constitute its capacities.

Not only does each company approach the city as the next frontier with its own ambitions and enjoy varying degrees of access to local governance, shaped by the particularities of place and politics, but even one company's strategies for urban growth can vary over time or across place. By complicating the notion of tech power beyond a purely economic capacity, my analysis shows that strategic and iterative interventions of tech companies, even those as powerful as Google's, matter as much as their economic heft and symbolic capital. Tech companies often align tools and techniques with the immediate demands and political priorities of local governance, even when their primary interest is still exploiting the city for profit.

In the next section, I discuss how Google stands out among other tech companies and how this distinction matters in understanding the company's attempts to insert itself into the digital growth machine.

How Google became urban

The subtitle is inspired by a recent article from sociologist Sharon Zukin (2020), who examines Silicon Valley's attention to metropolitan cities over the last couple of decades. For the most part, Google's trajectory mirrors that of the rest of Silicon Valley that Zukin reviews in the essay. Rapid technological change, the allure of tech-sector employment and aggressive courtship by local governments have allowed the tech industry to become a prominent actor in cities over time (Zukin, 2020). Yet Google also stands apart from disruptors like Uber or Airbnb. It is not just another tech firm, it is a member of Big Tech, a cohort that also includes Apple, Amazon, Microsoft and Meta/Facebook.

Big Tech wields a unique kind of power: its products set industry standards, its decisions have far-reaching impact and its sheer scale allows these companies to dominate

Silicon Valley and beyond (Birch and Bronson, 2022). New tech startups desire to be absorbed into Big Tech ecosystems (Hellman, 2022), allowing these giants, with their monopoly power and cutting-edge computing capacity, to solidify their roles as both architects and gatekeepers of the industry (Kak, 2023).

Another key distinction of Big Tech is that, despite its sprawling size, it also has the advantage of acting simultaneously as platforms and infrastructures (Plantin et al., 2018). As a platform company, for instance, Google sells its programmability as a service, enabling several public and private entities to take up Google-powered data and analytics for their own systems. The prospect of working with Google's code and tools is appealing, especially to resource-poor organisations, as that offers a seemingly straightforward way to harness data and analytical capabilities while acting independently. But Google is also a massive infrastructure that consolidates control over vast web-based resources and secures an unprecedented dominance in knowledge production and distribution. The company enjoys a near-monopoly on search and access to various kinds of information online.

I frame Google's political-economic capabilities in cities through the lens of this dual capacity of platform modularity and infrastructural power as a member of Big Tech. The company spotlights its data-centric affordances and flexible programmability to launch experimental, speculative initiatives in urban environments. Municipalities are often eager to let Google come into their offices and streamline their decision-making processes with advanced analytical products. Plus, Google's symbolic and economic capital, along with its computing resources, attracts enthusiastic collaborators in cities beyond local governments, thereby making it easier for the company to test work-in-progress ideas. For resource-strapped cities, these experiments are framed not as intrusions but as gifts – opportunities to access tools they could not afford otherwise.

Google's sprawling organisational structure, stretching across multiple sectors, equips the company to operate simultaneously on different fronts, augmenting its influence with dexterity. In that sense, the company is also a vast, fast-growing infrastructure. This infrastructural reach, which is embedded not just online but increasingly in physical territories, positions Google to pit different cities or public agencies against each other. At the local level, it affords the company a material and epistemological advantage to shape how cities understand and organise themselves, often through the lens of Google's own products.

Methodologically, I use the cases of Google Fiber and Sidewalk Labs to examine the ways that Google has mobilised infrastructural and platform capabilities in its urban-tech initiatives since the 2010s. Fiber and Sidewalk Labs are two separate units within Google, but both ventures were launched as experimental initiatives, explicitly targeting cities. Their business models, field operations and ties with local governments vary, thereby allowing me to compare the two projects and to trace their diverse and shifting strategies.

The empirical material for this article comes from a larger research project for an ethnographic book manuscript on testbed urbanism. In this article, I draw on 23 in-depth interviews that I conducted with city officials and civic leaders in Kansas City about Google Fiber between 2016 and 2019 and five interviews with entrepreneurs and technologists associated with Sidewalk Labs between 2016 and 2017 in New York City. The goal of these interviews was to better understand how Google launched these projects in cities and collaborated with local governments. I also use my notes from the public events I attended in Kansas City and

New York City between 2016 and 2018, where Google's local managers or company executives spoke about Fiber or Sidewalk Labs. Since my requests to interview Google employees were repeatedly turned down during this larger project, these public meetings were the only way to hear from Google representatives. I complement those data with company documents, archived websites, formal contracts with local governments and local and national news coverage of Google Fiber and Sidewalk Labs between 2010 and 2020.

Across interview transcripts, field notes from public events, news coverage and archival research, my analysis focuses on documenting the trajectory of Google Fiber and Sidewalk Labs, Google's publicly shared visions for both initiatives and experiences of city officials, civic leaders and local entrepreneurs with Google Fiber and Sidewalk Labs. Rather than comparing cities, I focus on comparing the two projects to piece together in what ways Google's political-economic ambitions between 2010 and 2020 intersected with the emerging digital growth machine in US cities.

Google Fiber: Expanding infrastructural control

In February 2010, Google announced its plan to build a fibre-optic network in select US cities. Called 'Google Fiber', the service promised data transfer speeds of up to one gigabit per second – nearly 100 times faster than the national average at the time, according to the company. To decide where to launch, Google publicised a nationwide competition inviting cities to compete to become its trial site (Mejia, 2015). Over 1000 municipalities participated, vying for Google's attention by using various tactics. The company framed Fiber primarily as a disruption to the US broadband market, which had long failed to keep pace with big tech companies' online growth (Subrahmanyam, 2010). But it was also an opportunity for Google to territorialise its innovation rhetoric at the city level beyond what it had achieved with software (Halegoua, 2020).

Through its nationwide competition, Google sought a city partner capable of minimising its costs while maximising the visibility and efficiency of this new business venture. If Fiber was an experiment in finding cost-efficient ways to build broadband, the company needed to simplify its field operations and circumvent local bureaucratic hurdles. Municipal governments regulated access to essential rights of way, including those required to install fibre-optic cables on or beneath public and private property. Google wanted to use utility poles whenever possible to avoid digging and extensive construction. Finding cooperative public or private utility companies and local government partners was crucial to the project's success.

Fiber's 15-page application form, which each interested city was required to complete, requested detailed documentation about municipal assets such as utility poles, conduits and rights of way. It also asked for information about local taxes, existing regulations and housing markets, as well as a market analysis of broadband demand. Business strategist Joanne Hovis, for instance, observed that Google Fiber avoided locations 'where they're not going to have a strong partner and facilitator in the city' (Koebler, 2016). Similarly, Milo Medin, Google Fiber's former head, indicated that mid-sized US cities – where installation costs were lower and national internet service providers lacked dominant market presence – would be prioritised for pilot projects (Bergen, 2016).

Beyond identifying a trial site, the competition enabled Google to amass an extensive database of municipal assets, regulatory frameworks and civic capacities across the

country. In the wake of the Great Recession of 2008, local governments were already eyeing the tech industry as a potential lifeline out of their financial strains. By collecting vast amounts of strategic knowledge from multiple cities, the company was able to assess which ones offered the most favourable conditions. The questions on the application form presented the scope of municipal involvement that Google envisioned in working with local governments.

In the spring of 2011, Google selected Kansas City as the inaugural site for Fiber. The selected location spanned two states – Missouri and Kansas – and incorporated two municipalities, Kansas City, Missouri (KCMO) and Kansas City, Kansas (KCK). The Board of Public Utilities in KCK and the private utility company Power & Light in KCMO agreed to allow Google access to existing utility poles, an arrangement that promised significant time and cost savings for the company (Hendricks, 2011). Reflecting on the city's partnership with Google, a senior city official later described the local government's role as 'aggressively facilitating [Google's] experiment' (senior city official, 9 November 2015).

The contractual agreement between Google and Kansas City underscored the depth of this facilitation (see RAMS, n.d.). Key provisions included granting Google near-free access to all city assets and infrastructures, committing to a speedy approval process for permit applications within five working days and designating an executive sponsor at the highest municipal level, alongside a single point of contact within the city administration. Additionally, Kansas City established a dedicated team solely tasked with supporting Google Fiber, provided the company with detailed Geographic Information System data and digital tools for mapping city-owned facilities and delegated traffic control management for the project to Google.

It is important to note that city officials did not view the agreement with Google Fiber as an inequitable arrangement between a financially dominant tech corporation and a resource-constrained public institution. Instead, they framed it as a significant opportunity for local growth due to Google's reputation as a tech giant. One senior official noted that the city willingly waived 'a few million dollars' in permit fees while maintaining close oversight of Fiber's construction progress (senior city official, 9 November 2015). A former city council member characterised the agreement as 'a bargain in itself', emphasising that Fiber's estimated US$46 million investment in KCMO far exceeded what cities typically gain from subsidies for large-scale construction projects (former city council member, 1 February 2016). Cities could not 'incentivize brick and mortar projects for that amount of money', they suggested. Beyond the financial investment, they highlighted the intangible benefits: 'Just the earned media that we got for the last five years – you can't buy that' (former city council member, 1 February 2016).

Kansas City was not an exception. Each subsequent city selected for Fiber's rollout, such as Provo, Utah or Austin, Texas, similarly embraced the national spotlight and celebrated Fiber as a boon for local economies (Sottek, 2013). Google effectively leveraged this civic optimism, rooted in its symbolic capital, and incorporated it into launch plans in these mid-sized US cities. Even though the company framed its relationship with local governments as a partnership, that was more of a rhetorical move since its engagement was not a traditional case of public–private partnership. Fiber was the sole owner of the broadband network, coming into cities to test different business models. In Kansas City or Austin, Google worked with public and private utility companies, for instance, and in Provo, it

purchased an existing fibre network to upgrade it (Mitchell, 2013). But even without a formal public–private partnership in place, Fiber's expectations from local government often exceeded the standard demands of other private companies.

Fiber's operations also exposed the limits of municipal authority, as officials struggled to hold the company accountable or enforce compliance with local regulations (Grisales, 2016). Construction delays often left residents without updates, fuelling frustration over damages, trespassing and disruptions, such as driveways blocked by contractors (Grisales, 2016). Google Fiber also faced widespread criticism for favouring affluent neighbourhoods in its rollout plans, perpetuating 'digital redlining' in cities like Kansas City, Nashville and Atlanta (Abdullah, 2017; McGee, 2016). In moments of crisis, Google's silence loomed large. City officials, caught in the crosshairs, often stepped in to clean up the aftermath – resolving disputes, repairing damage and managing the social and logistical chaos that trailed the company's ambitious operations on the ground.

After five years of trials across the United States, in late 2016 Google Fiber announced that it had halted expansion plans and laid off almost 10% of staff (Pressman, 2017). The company's exit from Louisville, Kentucky in 2019 was a particularly notable case of Fiber's failure, which was highly publicised (Welch, 2019). Google acknowledged the ineffectiveness of its cost-saving strategies in Louisville and abruptly left the city, abandoning municipal partners and residents (Google Fiber, 2019). While expansions were on hold, the company continued its operations in existing cities and incorporated Fiber as 'GFiber' into Alphabet. Around 2022, Google resumed extending Fiber to new markets (Hardesty, 2024). As of December 2024, the GFiber website (https://fiber.google.com) says that the unit operates in 32 cities, with 13 more in the pipeline.

Google Fiber's original plan was to explore cost-effective methods for launching fibre-optic broadband, wireless connectivity and 5G networks, thereby augmenting the company's online dominance by physically building up internet infrastructures. Adopting a testbed urbanism approach (Baykurt, 2019; Halpern et al., 2013), Google approached cities as sites of experimentation and improvement. It began to engage with local governments, collaborated with local utility companies and learned to navigate, or circumvent, municipal rules and regulations (Botero Arcila, 2021). Beyond the rhetorical partnerships, local governments were relegated to the role of lenient regulators and active facilitators of Google's operations. Relying predominantly on its cultural capital, Google offered municipalities a promise of innovation and growth in their local tech ecosystem without any tangible plans in place. In return, municipalities diverted public resources to support the company to build a new internet infrastructure, despite the absence of direct financial subsidies (Terrell, 2013; Terrell and Jackson, 2013).

Sidewalk Labs: Urban data platforms

Google launched Sidewalk Labs in June 2015 as a startup dedicated to 'urban innovation'. Google executives described the new initiative as 'a relatively modest investment' (Lohr, 2015) and emphasised its distinct focus. Sidewalk Labs was intended as a bridge across the so-called 'urban-tech divide', proposing technology-driven solutions to urban problems (O'Kane, 2022). Headed by Dan Doctoroff, the former deputy mayor of New York City, the company repeatedly referred to merging urban policy and technical expertise. '[Dealing with cities] requires operating at two speeds at the same time: patience and urgency', Doctoroff

remarked once, to demonstrate the willingness of Sidewalk Labs to work through the complexities involved in local policymaking (Budds, 2016).

Unlike Fiber, which treated the city as a site for building internet infrastructure, Sidewalk Labs articulated a vision to rebuild the city 'from the internet up' (Doctoroff, 2016). The startup had a team of architects, planners and technologists who all worked on how to 'rethink district-scale infrastructure with digital tech woven in', according to Anthony Townsend, who was an early employee of Sidewalk Labs (Bozikovic, 2022). Early communications from Sidewalk Labs pointed out the importance of using '[city] assets more effectively', a euphemism for repurposing urban infrastructures into connectivity, broadly defined, and turning them into tools for data collection and extraction (Mattern, 2020).

Sidewalk Labs' inaugural project exemplified this approach. The company acquired and merged two firms responsible for developing LinkNYC, a network intended to replace New York City's payphones with digital kiosks offering free public WIFI, phone calls, web browsing and mobile-charging stations (Shapiro, 2020). Sidewalk Labs reportedly held a minority stake in the project, but its staff played a key role in 'navigating the government bureaucracy and stringent regulations', successfully moving LinkNYC through the New York City government in less than a year (Heath, 2016). This was a public–private partnership to be financed by advertising revenues generated from the dual 55-inch screens on the digital kiosks. The local government appreciated that no cost burden fell on taxpayers, while the kiosks offered the dual advantage of providing a public benefit (free WIFI) and a new source of revenue (advertising) (Heath, 2016).

Sidewalk Labs's three-pronged strategy thus included urban data collection via sensors and WIFI, revenue generation via data analytics and a professed commitment to delivering public benefits for cities. Rather than Google's existing and growing infrastructural capacity, Sidewalk Labs emphasised the company's platform capabilities and particularly its strength in data analytics. Speaking at Columbia University in the summer of 2016, Rohit Aggarwala, then Chief Policy Officer at Sidewalk Labs, framed the central challenge of big data and urban environments as identifying 'what information was useful and where were the gaps'.[1] Sidewalk Labs's role, he suggested, was to help cities leverage existing municipal data both for better local governance and for creating new kinds of market value. Similar to Fiber, Google's main approach was trial and error, so the company began to invest in a diverse portfolio of urban-tech ventures and reached out to local governments or joined federal grant opportunities to offer its work-in-progress products to be tested across the United States.

Flow was one of those Sidewalk Labs initiatives. Marketed as a software platform to help cities 'improve urban mobility with better data' (Flow, 2025), it was first introduced as part of the US Department of Transportation's 'Smart City Challenge'. This competition encouraged mid-sized US cities to vie for US$40 million in federal funding to improve public transportation systems (Gandy and Nemorin, 2020). Sidewalk Labs offered Flow to the seven finalist cities as an opportunity to test this new platform's capabilities in urban environments. Using 'camera-equipped vehicles, like Google's Street View cars', to survey public parking spaces and to capture information from roadside parking signs, Flow promised to provide cities with better data and predictive capabilities in transit planning (Harris, 2016).

In addition to LinkNYC and Flow, Sidewalk Labs invested in Replica (an urban planning software), VoltServer (focused on

smart grids), Delve (a generative urban design tool), CityBlock (targeting personalised healthcare for low-income communities) and Katerra (specialising in mass-timber construction). Some of these initiatives became independent spin-offs, while others either failed or were acquired by different companies. Across these different startups, Sidewalk Labs followed a recurring pattern: partnering with municipalities to demonstrate proof of concept and subsequently trying to sell these tools to public agencies.

Journalistic investigations into Flow and Replica demonstrated the scope of these initiatives and what kind of partnerships Sidewalk Labs proposed to public agencies. The terms of a contract between Flow and local governments demanded that cities distribute transit subsidies through Sidewalk Labs and use the company's mobile payment system for transit and parking services (Harris, 2016). The revenue generated was to be shared between cities and Sidewalk Labs (the city would receive 1% of the revenue, but Sidewalk Labs did not disclose its cut). Separate reports indicated that Sidewalk Labs intended to charge local governments subscription fees based on 'different tiers of data and higher levels of analytic and diagnostic abilities' (Dougherty, 2016).

Unlike Google Fiber, Sidewalk Labs therefore presented a more ambitious strategy for extracting and monetising urban data. Cities were not merely a backdrop for the company's experimentation. Municipalities were active participants who not only facilitated the trial of Google-powered startups and navigated regulatory barriers but also shared revenues and responsibilities. The new revenue streams offered by Sidewalk Labs startups, such as subscription models, digital kiosk advertisements and mobile payment systems, were a sign that the company adopted a strategy of 'platformisation of infrastructures' (Plantin et al., 2018) or what economic sociologists call the 'assetisation' of urban infrastructures (Birch and Muniesa, 2020). LinkNYC was primarily an urban digital ads network based on location and foot traffic with the side benefit of providing internet service, for instance. Flow was a platform to process mobile payment transactions for parking and traffic fees with the side benefit of transit planning. By layering existing services with its own programmability, Sidewalk Labs – or Google – intended to create a durable rent from municipal infrastructures (Birch and Muniesa, 2020).

I frame Sidewalk Labs as Google's strategy to grow in cities 'bit by bit' for two reasons. First, as discussed above, the company tried to apply its core business model, rooted in data analytics and monetisation, to the built environment by extracting data and generating rent from the city's various municipal structures and services. Second, Sidewalk Labs distributed its investments across different products, experimenting with a variety of ways to work with cities. Positioning itself similar to an agile startup, Sidewalk Labs pursued public–private partnerships while discreetly using the parent company branding. Rather than arriving in a new place as Google – which was the Fiber strategy – Sidewalk Labs and its various startups strategically obscured their association with Google so that they could experiment without much public scrutiny and immediate criticism.

In December 2021, CEO Dan Doctoroff stepped down due to health concerns, leading to Sidewalk Labs being reabsorbed into Google as an 'urban innovation unit'. The unit retained a focus on investing in urban technologies, continuing to spin off ventures such as Coord (later rebranded as Pebble), which conducted experiments in cities like Nashville and Aspen to offer curb management solutions (Surico, 2022). As of July 2024, however, the Sidewalk Labs website is off the web and instead redirects to 'Google Earth'. There is no public announcement

about whether the unit was reincorporated, again, into another one, or if this is merely a name change. Google Earth retains an interest in urban planning and sustainability, but its scope and strategies differ markedly from Sidewalk Labs's original vision.

Discussion

Google Fiber and Sidewalk Labs, both city focused and unveiled with great fanfare, produced uneven results over the decade 2010 to 2020. Fiber, once heralded as a bold reimagining of internet infrastructure, began with great ambition before losing momentum, only to reemerge as a quieter but growing business unit within Google. Sidewalk Labs, by contrast, launched with sweeping promises to revolutionise cities embedded within the internet, only to recede into near-invisibility – its fate uncertain. As many scholars who study tech companies intimately know, trying to trace the patterns of these projects from the outside is a bit like reading tea leaves. Google's internal decision making remains inaccessible to most of us, leaving only fragments from which to infer whether the stops and starts were the result of strategic pivots or the absence of a strategy altogether.

As a case of infrastructural control, Google Fiber wielded the company's economic and symbolic clout to dramatic effect, encouraging cities to compete for its investment while demanding significant concessions in return. Sidewalk Labs, by contrast, adopted a more conventional public–private partnership model while offering new products powered by Google's platform capabilities. Whether seeking to extend its infrastructural control over connectivity or mining the city as a resource for data extraction and monetisation, Google repeatedly presented these urban interventions as experiments, leveraging cities and municipal agencies as testing grounds. These varied approaches all aimed to embed the company in local governance, staking its claim in different positions across the urban data value chain.

Even between these two efforts, there is little evidence of a unifying vision, no clear throughline that explains how Google conceived of its role in shaping urban futures. However, I argue that it is precisely this ambiguity – the capacity to shift roles and adapt to locales – that lies at the heart of Google's political-economic power in the digital growth machine. As a Big Tech company capable of positioning itself as both a platform and an infrastructure provider, Google's ventures into urban-tech sought to build influence through a patchwork of initiatives. From the ambitious rollout of Google Fiber to the grand promises of Sidewalk Labs and its network of related startups, these efforts relied on collaborations with city officials and civic organisations. Each project was alternately amplified by strategic hype and withdrawn in the face of criticism, which, again, hints at the company's attempt at flexibility in navigating public scrutiny while maintaining its presence in urban environments.

By highlighting the lack of coherence in Google's city-focused strategies, I do not intend to suggest an absence of power. On the contrary, despite occasional scandals and public backlash, Google's political-economic influence in cities endures. The company continues to mobilise its platform and infrastructural capacities to pursue various urban experiments. And these efforts are defined not just by the staged publicity of the company's brand name but increasingly by the unremarkable, iterative trials and errors through which Google-supported initiatives blend innovative rhetoric with familiar demands for municipal concessions and subsidies. Plus, the company's breadth, both internally and in partnership with other

companies, brings it into contact with local governments and civic organisations in myriad ways.

Rather than taking the ups and downs of Google Fiber and Sidewalk Labs at face value, my analysis intends to demonstrate how Google continually uses the city as a site for expansion. The company's influence is both pervasive and elusive, shaped as much by its own interests as by the terms of its collaborations with municipalities. Its fragmented approach – operating under different names, pursuing diverse methods and relying on trial and error – allows it to navigate local politics and to deflect public scrutiny. It also makes its presence in cities harder to pin down and less susceptible to regulation.

Conclusion

This article analyses Google as an ambitious urban actor that has tried to secure a foothold in the digital growth machine, with some notable trials and errors, in the recent past. Lacking direct access to the company's internal deliberations, I instead examine how Google has experimented with its Big Tech stature, leveraging its dual identity as both infrastructure and platform and obscuring its branding at strategic moments to build a political and economic presence in US cities. My analysis does not aim to measure whether Google's urban-tech initiatives were a success or a failure but rather to document how it has used its vast resources, on multiple fronts, to chase the ever-elusive next big thing in the tech industry.

By analysing the evolution of Google's urban-tech power in the past decade, this article aims to contribute to the studies of the 'digital growth machine' in two ways. First, it calls for a more nuanced analysis of the affordances and weaknesses of tech companies, one that moves beyond solely explaining their power via financial heft and to examine how they enlist other urban actors in speculative ventures. Second, it also invites more research on how even a single company adapts, pivots and repackages itself in response to local conditions and public scrutiny while stoking the growth hype (both for the company and cities). Rather than assuming a monolithic or stable conception of tech power in local governance, attending to these differences, shifts and iterations offers a sharper understanding of the extent of tech's influence in cities.

This article also underscores the importance of studying Big Tech's broader role in the built environment. More studies are needed to understand how their flashy initiatives intersect with more traditional urban footholds, like data centres, warehouses and corporate offices. To what degree do Google and Amazon, or Google and Airbnb, resemble each other – or diverge – in their urban strategies? And how do local politicians and civic groups react to these interventions, especially given the long trail of failures shadowing the innovation rhetoric that these companies promote? Answering such questions calls for methodological expansion, too: oral histories, comparative studies and on-the-ground documentation that capture not just the aspirations of tech giants but also the lived realities of the neighbourhoods they touch.

In considering Google's urban-tech trials in the previous decade, it becomes clear that the story of tech power in cities is not simply one of dominance but of negotiation, experimentation and the clashes of corporate interests with local demands. In addition to a more nuanced understanding of their power in cities, these findings, I hope, demonstrate the vulnerabilities of tech companies in the

digital growth machine and the possibility of bending their influence more towards the public interest.

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Note

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References

Abdullah K (2017) Google's broadband war redlining Black communities. *The Philadelphia Tribune*, 6 January. Available at: https://www.phillytrib.com/commentary/googles-broadband-war-redlining-black-communities/article_78510d50-d377-59ef-8032-2db568d647c4.html (accessed 4 March 2025).

Baykurt B (2019) *The city as data machine: Local governance in the age of big data*. PhD dissertation, Columbia University, USA.

Baykurt B and Raetzsch C (2020) What smartness does in the smart city: From visions to policy. *Convergence: The International Journal of Research into New Media Technologies* 26(4): 775–789.

Bergen M (2016) Google Fiber is the most audacious part of the whole Alphabet. *Vox*, 11 May. Available at: https://www.vox.com/2016/5/11/11613308/google-fiber-alphabet (accessed 4 March 2025).

Birch K and Bronson K (2022) Big tech. *Science and Culture* 31(1): 1–14.

Birch K and Muniesa F (eds) (2020) *Assetization: Turning Things Into Assets in Technoscientific Capitalism*. Cambridge, MA: The MIT Press.

Botero Arcila B (2021) The place of local government law in the urban digital age. Available at: https://ssrn.com/abstract = 3848202 (accessed 21 February 2024).

Bozikovic A (2022) The end of Sidewalk Labs. *Architectural Record*, 22 March. Available at: https://www.architecturalrecord.com/articles/15573-the-end-of-sidewalk-labs (accessed 8 April 2025).

Budds D (2016) How Google is turning cities into R&D Labs. *Fast Company*, 22 February. Available at: https://www.fastcompany.com/3056964/how-google-is-turning-cities-into-rd-labs (accessed 4 March 2025).

Carr C and Hesse M (2022) Technocratic urban development: Large digital corporations as power brokers of the digital age. *Planning Theory & Practice* 23(3): 476–485.

Doctoroff DL (2016) Reimagining cities from the Internet up. *Sidewalk Talk*, 30 November. Available at: https://medium.com/sidewalk-talk/reimagining-cities-from-the-internet-up-5923d6be63ba (accessed 21 February 2024).

Dougherty C (2016) Cities to untangle traffic snarls, with help from Alphabet unit. *The New York Times*, 17 March. Available at: https://www.nytimes.com/2016/03/18/technology/cities-to-untangle-traffic-snarls-with-help-from-alphabet-unit.html (accessed 4 March 2025).

Edwards D, Cooper ZGT and Hogan M (2024) The making of critical data center studies.

Convergence: The International Journal of Research into New Media Technologies. Epub ahead of print 23 January 2024. DOI: 10.1177/135485652312241.

Fields D (2023) Big capital, precision technologies, and structural power in the U.S. housing market. In: *Panel 2: How Is Digitization Changing Investments in Housing? Bringing Digitization Home: How Can Technology Address Housing Challenges?* Symposium, March 2022, Joint Center for Housing Studies, Harvard University, Cambridge, MA, USA.

Flow (2025) Overview [LinkedIn page]. Available at: https://www.linkedin.com/company/flow—a-sidewalk-labs-company/about/ (accessed 4 March 2025).

Gandy O and Nemorin S (2020) Transportation and smart city imaginaries: A critical analysis of proposals for the USDOT smart city challenge. *Journal of International Communication* 14(14): 1232–1252.

Google Fiber (2019) Saying goodbye to Louisville. *Google Fiber Blog*, February 7. Available at: https://fiber.googleblog.com/2019/02/louisville_7.html (accessed 12 September 2024).

Grisales C (2016) Google fiber install process draws hundreds of complaints. *Austin American-Statesman*, 1 March. Available at: https://eu.statesman.com/story/news/2016/02/23/google-fiber-install-process-draws-hundreds-of-complaints/10170070007/#:~:text=-The%20co mplaints%20include%20home%2-C%20landscape,against%20it%20or%20-its%20contractors (accessed 4 March 2025).

Halegoua GR (2020) *The Digital City: Media and the Social Production of Place*. New York, NY: New York University Press.

Halpern O, LeCavalier J, Calvillo N, et al. (2013) Test-bed urbanism. *Public Culture* 25(2 70): 272–306.

Hardesty L (2024) Fiber wasn't always the darling: Remember Google Fiber and FiOS. *Fierce Network*, 17 April. Available at: https://www.fierce-network.com/broadband/fiber-wasnt-always-darling-remember-google-fiber-and-fios (accessed 8 August 2024).

Harris M (2016) Secretive Alphabet division funded by Google aims to fix public transit in US. *The Guardian*, 27 June. Available at: https://www.theguardian.com/technology/2016/jun/27/google-flow-sidewalk-labs-columbus-ohio-parking-transit#:~:text=Secretive%20Alphabet%20division%20funded%20by%20Google%20aims%20to%20fix%20public%20transit%20in%20US,-This%20article%20is&text=Sidewalk%20Labs%2C%20a%20secretiv e%20subsidiary,obtained%20by%20the%20Guardian%20reveal (accessed 4 March 2025).

Harvey D (1982) *The Limits to Capital*. Oxford: Oxford University Press.

Heath A (2016) Inside the plan to cover New York City's streets with free, blazing fast Wi-Fi. *Business Insider*, 1 March. Available at: https://www.businessinsider.com/inside-linknycs-free-public-gigabit-wifi-plan-2016-2 (accessed 21 February 2024).

Hellman J (2022) Big Tech's 'voracious appetite,' or entrepreneurs who dream of acquisition? Regulation and the interpenetration of corporate scales. *Science and Culture* 31(1): 149–161.

Hendricks M (2011) Google's big news connects the Dottes. *The Kansas City Star*, 31 March. Available at: https://infoweb.newsbank.com/apps/news/openurl?ctx_ver=z39.88-2004&rft_id=info%3Asid/infoweb.newsbank.com&svc_dat=WORLDNEWS&req_dat=0F41EC32601CE3D6&rft_val_format=info%3Aofi/fmt%3Ake-v%3Amtx%3Actx&rft_dat=document_id%3A-news%252F136514365C3BA170 (accessed 4 March 2025).

Kak A (2023) Make no mistake—AI is owned by big tech. *MIT Technology Review*, 5 December. Available at: https://www.technologyreview.com/2023/12/05/1084393/make-no-mistake-ai-is-owned-by-big-tech/ (accessed 20 March 2024).

Koebler J (2016) Google is lighting up dormant 'dark fiber' all over the country. *Motherboard*, 25 February. Available at: http://motherboard.vice.com/read/google-is-lighting-up-dormant-dark-fiber-all-over-the-country (accessed 21 February 2024).

Logan JR and Molotch H (2007) *Urban Fortunes: The Political Economy of Place*. Berkeley, CA: University of California Press.

Lohr S (2015) Sidewalk Labs, a start-up created by Google, has bold aims to improve city living. *The New York Times*, 10 June. Available at: https://www.nytimes.com/2015/06/11/technology/sidewalk-labs-a-start-up-created-by-g

oogle-has-bold-aims-to-improve-city-living.html#:~:text=The%20founders%20describe%20Sidewalk%20Labs,the%20cost%20of%20city%20living (accessed 4 March 2025).

Luque-Ayala A and Neves Maia F (2019) Digital territories: Google Maps as a political technique in the re-making of urban informality. *Environment and Planning. D, Society & Space* 37(3): 449–467.

Mattern S (2020) Post-it note city. *Places*. Available at: https://placesjournal.org/article/post-it-note-city/ (accessed 1 December 2024).

Mayer V (2021) From peat to Google Power: Communications Infrastructures and structures of feeling in Groningen. *European Journal of Cultural Studies* 24(4): 901–915.

McElroy E and Vergerio M (2022) Automating gentrification: Landlord technologies and housing justice organizing in New York City homes. *Environment and Planning. D, Society & Space* 40(4): 607–626.

McGee J (2016) Pastors to Google Fiber: Don't exclude poor communities. *The Tennessean*, 28 June. Available at: https://www.tennessean.com/story/money/2016/06/28/pastors-google-fiber-dont-exclude-poor-communities/86484240/ (accessed 4 March 2025).

Mejia R (2015) A pressure chamber of innovation: Google Fiber and flexible capital. *Communication and Critical/Cultural Studies* 12(3): 289–308.

Mitchell C (2013) Google buys Provo community-owned network. *Community Networks*, 19 April. Available at: https://communitynets.org/content/google-buys-provo-community-owned-network (accessed 12 September 2024).

Molotch H (1976) The city as a growth machine: Toward a political economy of place. *American Journal of Sociology* 82(2): 309–332.

Moy C and Bui M (2023) Do Black-owned restaurants matter? Yelp and platform visibility amid a racial reckoning. *Proceedings of the Association for Information Science and Technology* 60(1): 1080–1082.

O'Kane J (2022) *Sideways: The City Google Couldn't Buy*. Toronto: Random House of Canada.

Parkar K, Zérah M and Mittal G (2023) Platformisation, infrastructuring, and datafication. *Economic and Political Weekly* 58(14): 53–60.

Plantin JC, Lagoze C, Edwards PN, et al. (2018) Infrastructure studies meet platform studies in the age of Google and Facebook. *New Media & Society* 20(1): 293–310.

Pressman A (2017) Google Fiber still expanding but more slowly than ever. *Fortune Magazine*, 29 March. Available at: https://web.archive.org/web/20170715043715/https://fortune.com/2017/03/27/google-fiber-expanding-slowly/ (accessed 12 September 2024).

Range Association of Municipalities and Schools (RAMS) (n.d.) Google Fiber project development agreement Kansas City. Available at: https://broadband.ramsmn.org/wp-content/uploads/2019/08/Google-Fiber-Project-Development-Agreement-Kansas-City.pdf (accessed 4 March 2025).

Rosen J and Alvarez León LF (2022) The digital growth machine: Urban change and the ideology of technology. *Annals of the American Association of Geographers* 112(8): 2248–2265.

Sadowski J (2020) Cyberspace and cityscapes: On the emergence of platform urbanism. *Urban Geography* 41(3): 448–452.

Schmahmann L, Ramiller A and Fields D (2024) Platform firms, commercial real estate cycles and San Francisco's growth as a tech cluster, 2008–2020. *Annals of the American Association of Geographers* 144(1): 139–163.

Shapiro A (2020) *Design, Control, Predict: Logistical Governance in the Smart City*. Minneapolis, MN: University of Minnesota Press.

Sottek TC (2013) Google Fiber is coming to Provo, Utah by late 2013. *The Verge*, 17 April. Available at: https://www.theverge.com/2013/4/17/4234258/google-fiber-is-coming-to-provo-utah (accessed 4 March 2025).

Subrahmanyam KVJ (2010) Google's fiber network is attempt to force telcos to change. *The New York Times*, 10 February. Available at: https://www.nytimes.com/external/venturebeat/2010/02/10/10venturebeat-googles-fiber-network-is-attempt-to-force-te-33607.html (accessed 4 March 2025).

Surico J (2022) Can technology help cities manage curbs better? *The New York Times*, 24 August. Available at: https://www.nytimes.com/2022/08/24/business/curbside-management-cities-technology.html (accessed 4 March 2025).

Terrell W (2013) Network free K.C. *Harper's Magazine Online*, 20 March. Available at: https://harpers.org/2013/03/network-free-k-c/ (accessed 21 February 2024).

Terrell W and Jackson S (2013) Only connect. *Harper's Magazine*, April, pp. 68–69.

Welch C (2019) Google Fiber is leaving Louisville in humiliating setback. *The Verge*, 7 February. Available at: https://www.theverge.com/2019/2/7/18215743/google-fiber-leaving-louisville-service-ending (accessed 12 September 2024).

Wells KJ, Attoh K and Cullen D (2023) *Disrupting D.C.: The Rise of Uber and the Fall of the City*. Princeton, NJ: Princeton University Press.

Wiig A (2015) IBM's smart city as techno-utopian policy mobility. *City* 19(2–3): 258–273.

Zukin S (2020) Seeing like a city: How tech became urban. *Theory and Society* 49(5): 941–964.

Zukin S (2021) Planetary Silicon Valley: Deconstructing New York's innovation complex. *Urban Studies* 58(1): 3–35.