

# THE INFRASTRUCTURE OF PUBLIC SPACE AND THE PUBLIC SPHERE

Philip Ashton | Department of Urban Planning and Policy, UIC

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## Introduction

As the theme of 2017 UIC Urban Forum suggests, we are living in an “infrastructural moment” in the United States. Public concern over a crumbling “hard” infrastructure fills newspapers, blog posts, and think tank reports. Calls for widespread investment in new and enhanced urban infrastructure come from across the political landscape, drawing on the notion that “public capital” is essential to both economic development and growth and the improvement of residents' quality of life. These reference not just roads and bridges, but also increasingly promote “soft” infrastructures – arts, cultural institutions, public space and amenities – as central to economic growth and innovation. In certain cases, these calls reference cutting edge infrastructural systems and technologies (such as driverless cars) that have yet to be invented.

At the same time, the legacies of earlier investments in public capital – both hard and soft – have become political flashpoints in new and unexpected ways. These conflicts do not always focus on the standard elements of politics – was decision making transparent? Was the project delivered on-time and on-budget? – but often hinge on symbolic and aesthetic elements, including the founding myths and imagined communities that underpin the “public”

in the notion of public capital. The contemporary controversy over Confederate monuments serves as a direct reminder that investments in public capital ostensibly designed to inspire a public sphere can just as easily produce conflict and division.

In this overview White Paper, I will lay out a set of themes that encompass the more specific approaches taken by other authors participating in the Forum. A central theme here is the notion of the “infrastructural ideal” (Graham and Marvin 2001, 43) that animates current aspirations and debates over urban infrastructure. This ideal has a number of components, the most important being that it draws together “hard” and “soft” infrastructure through a belief in the positive social benefits of public capital. Throughout the 20<sup>th</sup> Century, this ideal proved to be an expansive one, encompassing new forms of “infrastructure” as part of a progressive vision of the urban economy and polity. Nevertheless, the ideal has a number of fault lines that have made infrastructural investments controversial or politically contentious.

## The “Infrastructural Ideal”

Presidential campaigns over the last 30 years have been replete with calls for increased attention to urban infrastructure. As Democratic nominee in 1994, Bill Clinton proposed \$80 billion in federal spending on roads and mass transit through a “Rebuild America Fund.” Labeling this spending “an investment” rather than simply deficit spending, candidate Clinton argued “the 1980s saw the concrete foundations of the United States crumble” and called for significant federal spending on infrastructure to “help put Americans back to work and spur economic growth” (Chapman 1993). In 2016, Democratic presidential nominee Hillary Clinton echoed this approach with a proposed \$275 billion package of infrastructure spending, stating

“in America, we build great things together—from the transcontinental railroad to the interstate highway system to the Hoover Dam” (Clinton 2016).

Even Presidents whose pronouncements on infrastructure were more subdued echoed concerns over investment. “Adequate and well-maintained infrastructure is critical to economic growth” wrote George H.W. Bush in 1992 in an Executive Order incentivizing the privatization of “infrastructure assets” (defined as “any asset financed in whole or in part by the Federal Government and needed for the functioning of the economy” (Bush 1992). For President George W. Bush, the emphasis shifted post-9/11 to “critical infrastructure” – “including emergency preparedness communications, and the physical assets that support such systems” that are both essential to national security and most prone to disruption through terrorist attack (Bush 2001).

These programmatic proposals all point to an increasingly pressing reality for Americans: the material networks that facilitate economic activity and mobility are in crisis, having in large measure been built in the seventy-year period between 1890 and 1960. One estimate, by the American Society of Civil Engineers, projects that the country will need “\$3.6 trillion in public investment by 2020” (Cassidy 2016). However, these campaign proposals are more than just calls to avoid a crisis of collapsing roads and bridges. They are simultaneously aspirational, referencing what Graham and Marvin (2001, 43) have called a “modern infrastructural ideal” that connects infrastructure investment to growth, modernization and economic progress – the “belief that, by promoting circulation, infrastructures bring about change, and through change they enact progress, and through progress we gain freedom” (Larkin 2013, 332).

Even as there are a variety of physical forms and modes of provision that can be encompassed within this ideal, the distinction between forms is less important for “infrastructural idealists” than is the shared role they play in economic and social life. O’Neill (2010, 7) addresses this role by elaborating the economic arguments that separate out infrastructure as a good or service with special “publicness” characteristics. One set of characteristics focus on infrastructure’s universal availability and accessibility as a means of “[coordinating] and [sequencing] time with urban activities and household routines in concordance” (ibid., 8). Other characteristics include the inherent inter-connection (bundling) among infrastructural systems such that “access to any infrastructure item guarantees access to others, and so that all infrastructure items can deliver publicly in complementary fashion” (ibid., 8). The urban street is, for O’Neill, an exemplar here. Even as the street is a jumble of different technical systems – roads, sidewalks, sewers, water mains, lighting, electrical and communications lines, and so on – those “basic infrastructure items can be bundled so that every household has coordinated use of the whole package. Moreover, it is generally impossible, and often illegal, for a householder not to have access to the complete, braided set” (O’Neill 2010, 8).

Further, even as these forms of public capital may sit apart from other forms of economic activity, the infrastructural ideal situates them as fundamental to economic growth. The most direct mechanisms here are *externalities*, wherein the production of an infrastructural good “has unintended impact on the utility or production function of another individual or firm” (Faurie 2006, 534), producing “[benefits] that [flow] to those other than to the parties involved directly in the transaction” (O’Neill 2010, 8). With the rise of econometric modeling,

there has been an increasing focus on the precise measurement of externalities and the multiplier effects – which can be thought of as the economic rate of return (Gramlich 1994) – of specific infrastructure transactions. For instance, in the wake of the American Recovery and Reinvestment Act of 2009 (the Obama administration’s “stimulus” package, which pumped \$111 billion into infrastructural and science projects (Kliesen and Smith 2009)), there has been a robust debate over whether the legislation erred in emphasizing “shovel ready” projects to promote short-term job creation over more visionary or long-term investments in high speed rail, alternative energy, or fiberoptic networks (Copeland, Levine and Mallett 2011). This debate over the relationship between public capital and productivity parses increasingly fine lines between different forms of infrastructure transactions and their economic rate of return to specific users (Fernald 1999; Gramlich 1994).

However, these conventional economic arguments – public goods and externalities – reference only two aspects of economic theory used to defend investments in public capital. To fully apprehend the nature of the infrastructural ideal, however, we need to assess those investments from within two alternative economic theories: those rooted in Marshallian evolutionary economics; and those drawing on theories of the commons.

For the English economic historian Alfred Marshall, the externalities accompanying expanding infrastructural systems were more than simply transactional. “Every cheapening of the means of communication, every new facility for the free interchange of ideas between distant places,” he stated in his seminal *Principles of Economics* (1890, 157), “alters the action of the forces which tend to localize industries.” Whereas the spread of canals, roadways, rail, and other infrastructures of movement facilitated the purchase of goods from far-flung

locations, they also “[tend] to bring skilled artisans to ply their crafts near to the consumers who will purchase their wares.” This dynamic of specialization – the concentration of specialized workers and producers – was fundamental to the urbanization economies that lay at the center of Marshall’s evolutionary theory of economic growth.

This is a different argument regarding the social wealth-enhancing effects of infrastructural investment than that found in narrowly-transactional accounts debated by mainstream economists. As in William Cronon’s history of Chicago (Cronon 1991), where the integration of rail systems in the second half of the 19<sup>th</sup> century produces a “second nature” capable of reorganizing economic relationships, the infrastructures that facilitate communication and mobility were essential to the creation of Marshall’s fabled “thickly peopled industrial [districts]” wherein “mysteries of the trade become no mysteries, but are as it were in the air, and children learn many of them unconsciously” (ibid., 156). Stated differently, the external economies of urban infrastructural investment must be seen as expansive, stretching from the transactional to the systemic:

For each and every individual water and sewerage customer, for example, there is, concomitantly, a safe, hygienic city. From the power stations and electricity grids constructed to light and heat homes, there is also vast access to industrial power by manufacturers. From a road system that steers traffic onto efficient arterial roads there are (or there should be) quiet, safe suburban streets. And for (and, indeed, because of) every public transport user, there is cleaner air and there are fewer greenhouse gas emissions (O’Neill 2010, 8).

Another way to approach the social wealth-enhancing effects of infrastructural investment is to focus on how “hard” physical infrastructures are deeply enmeshed in civic virtues. Amin (2014, 138) has referred to this quality as the “liveliness” of infrastructure, arguing that infrastructure’s “mundane socio-technicalities... are fundamental in shaping

wellbeing, sociality, and organization.” Drawing on other threads of thinking from branches of law, economics, and anthropology, arguments about infrastructure’s liveliness reference an *urban commons* (Borch and Kornberger 2016) – one that both creates and depends on a shared public realm that is undifferentiated by property claims. For the legal scholar Carol Rose (1994), the efficiency of roadways and waterways as forms of hard infrastructure is dependent on a kind of “custom” whereby users abide by informal norms of co-occupation and use. Imagine the complexities of merging lanes on an interstate highway to accommodate summertime construction and one begins to see how efficient movement of people and goods (not to mention the possibility of maintenance and upkeep through temporary disruptions) depends on a set of social norms and customs. Similar customs might include yielding to faster traffic, use of turn signals when passing, or avoiding use of high beam headlights with oncoming traffic. Even as these may seem like minor, even insignificant, gestures, they nevertheless crucial to the efficient functioning of infrastructural systems – and because custom is essential to efficiency, it is central to the externalities celebrated by the infrastructural ideal.

To take another example, consider internet and communications technology (ICT). Even as the internet is popularly characterized as a de-territorialized “space of flows” (Castells 1996), it relies on extensive fixed investments in private and public capital to create the “virtual” spaces where users interact. This form of infrastructure was a significant focus of urban investment under Clinton-era “digital commons” programs emphasizing the digital divide and community technology centers (Mossberger, Tolbert, and McNeal 2007). Yet the viability of the internet – as a virtual community or as a commercial endeavor – depends on the “attention” of users, attention that is increasingly scarce (a function of the overwhelming proliferation of web-

based opportunities) or that is made fragile by destructive behaviors such as trolling (Terranova 2012).

Attention and custom exceed formal law – they cannot be easily codified, must be learned through repeated use, and policing would likely be a costly and difficult endeavor. Indeed, their very publicness qualifies the infrastructural spaces where they are operative as a “commons” that can only function efficiently by virtue of a set of civic habits shared by users. Like all forms of common property, they are subject to erosion as individual users seek advantage by flaunting custom. (Those who have driven Michigan interstates in midsummer, where drivers are packed into the passing lane all seeking a faster arrival at their vacation destination, have experienced what this is like.) As debates over the “digital commons” and net neutrality (the notion that pricing mechanisms cannot be used to make internet access scarce based on ability to pay) further reinforce, there are active questions over how regulation can best sustain the equal access necessary for “lively” infrastructure. For her part, Rose (1994) sees a selective emergence of legal protections of the shared public realm of infrastructure through “strong doctrines” of public protection; however, these doctrines seem narrow and only applicable to infrastructures such as roads and waterways.

## An Expansive Ideal: ‘Hard’ and ‘Soft’ Infrastructure

As the white papers in this collection all note, the question of what counts as infrastructure looms large in contemporary arguments regarding an infrastructural crisis. Sanjeev Vidyarthi, for instance, notes the distinction between utilities, facilities, and public works, each working at different scales or with a different role in economic life. Indeed, as there has been an increasing specialization of urban infrastructure following shifts in the underlying

nature of economic activity and competition, so too have disciplines of economics and public policy developed greater theoretical precision to assess and describe the various externalities that accompany new forms of “hard” infrastructure.

Notwithstanding this ever more narrow and specialized approach to economic externalities and multipliers, the infrastructural ideal has proven to be an expansive one. Throughout the heyday of the industrial city, the infrastructural ideal grew to encompass more than just “hard” infrastructural systems essential to economic growth. In this section, I want to focus on one thread of that expansion, whereby new forms of “soft” public capital have come to be accommodated under the heading of “infrastructure.” One aspect of this expansion involved the increasingly overt connection between investment in certain forms of public capital and imagined notions (and norms) of democratic community that are produced as “externalities” by those investments.

For American pragmatists such as John Dewey, the norms of growth and prosperity that underpinned economic expansion in the late 19<sup>th</sup> and early 20<sup>th</sup> centuries were fundamentally wrapped up in a set of liberal democratic impulses that necessitated their own forms of infrastructure. Economic growth and social progress were seen to be fundamentally tied to one another, both through the norms of “progress” but also through the infrastructural instinct rooted in Progressive Era bureaucracies. One form of public capital that was central to the link between growth and social progress was the public school. Dewey focused on public schools as essential to training youth into the moral habits of citizenry, making the universal accessibility of the physical plant of primary/secondary schools a key marker of progress to a better society. Even as large schools came to be associated with social control and the reproduction of an

ordered working class (Dewey 1902), there remained an aspiration that the public school could be a physical space capable of “another task: that of making the community as a whole capable of controlling its destinies” (Mumford 1938, 476). For his part, Dewey spoke passionately about overcoming the “the difference between the school as an isolated thing related to the state alone, and the school as a thoroughly socialized affair in contact at all points with the flow of community” (1902, 75). In this role of enhancing community self-determination, the public school was joined by “accessory” institutions, including “the public library and reading room, public workshops, studios, and laboratories, and public dance-halls and little theaters” (Mumford 1938, 477), whose small scale and orientation towards neighborhood might make them “physical facilities for a good social life” (ibid., 477) and key to the “new biotechnic regime based on the deliberate culture of life” (ibid., 9).

I suppose, whenever we are framing our ideals of the school as a social center, what we think of particularly is the better class of social settlements. What we want is to see the school, every public school, doing something of the same sort of work that is now done by a settlement or two scattered at wide distances through the city. We all know that the function of such an institution as Hull House has been primarily not that of conveying intellectual instruction, but of being a social clearinghouse. It is not merely a place where ideas and beliefs may be exchanged in the arena of formal discussion, for argument alone breeds misunderstanding and fixes prejudice; but it is much more a place where ideas are incarnated in human form and clothed with the winning grace of personal life. Classes for study may be numerous, but they are regarded as modes of bringing people together, of doing away with the barriers of caste or class or race or type of experience that keep people from real communion with each other (Dewey 1902, 84).

The public school was not the only form of “soft” infrastructure that demonstrated “democratic externalities” in this way. Investments in public space have similarly been important to contemporary theorizing about urban democracy (Amin and Thrift 2002). As Charlie Hoch notes in his white paper (“Infrastructure of Urban Play”), parks and playgrounds

were seen as critical to the health and welfare of the nation by late-19<sup>th</sup> and early-20<sup>th</sup> century urban reformers. For organizations such as the American Park and Outdoor Art Association (formed in 1893) or the American League for Civic Improvement (founded in 1902), not only were green spaces remedies to the pollution and congestion of the industrial city, but they formed the basis for democratic encounter between social classes or between native and immigrant (Amin and Thrift 2002, 133; Boyer 1986). Notwithstanding the patronizing subtext of much of these reform organizations – which saw advocacy of parks and green space grounded in the need for moral uplift on the part of the poor – outdoor spaces became a key part of the public sphere or the public patrimony. Nor were these arguments limited to a set of Progressive Era reformers. Sennett (1999, 23) echoes a significant strand of contemporary urban theory when he argues that public space remains a “site that offers relief from the burdens of subjective life” that facilitates “mutual engagement, and so mutual obligation and loyalty.”

Fused to a growing rational bureaucracy within large Progressive Era cities, this expansive infrastructural ideal gave rise to a particular form of urban life. Walking the streets of New York City, to take a prominent example, one gets a sense of how concerted investment in public capital transformed the experiences of residents who only decades earlier might have been crowded into the city’s tenements. Alongside the system of thoroughfares, bridges, and tunnels – the “hard” infrastructure so prized by “City Builder” Robert Moses (Caro 1972) – we find the neighborhood handball and basketball courts and the network of pocket parks and swimming pools, the solidity of elementary and secondary schools or the city’s public library system, and the edifices of the City University of New York (once free and considered the “Blue Collar Harvard”). These forms of public capital and the institutions that support them may not

have radically transformed the economic circumstances of tenement residents, but they nonetheless remain a distinguishing and important physical and social element of the city.

Moreover, the expansion of infrastructural ideal was based on more than neighborhood institutions or open spaces alone. Arts and cultural institutions rode on the coattails of expanding physical networks of roads, rails, and communications, with advocates arguing that these forms of “soft” infrastructure similarly “delivered other benefits, such as binding the social and cultural activity of a city” (O’Neill 2010, 7). Urban reformers may have been less interested in museums, galleries, symphonies, or opera houses, as they seemed removed from the ideals of rationalizing the industrial city or assimilating the exploding migrant population into a nascent urban democracy. Nevertheless, by the heyday of the industrial city – from 1880 through the Great Depression – arts and cultural institutions in US cities were proliferating through substantial patronage by urban elites (Sites 2003). This patronage had a “hard” dimension, in the form of monumental museum buildings, opera houses, or symphony halls, often paid for through public subscription. The benefits of these physical investments were perhaps more nebulous than other “hard” infrastructure or public institutions such as schools, but by positioning the city as a “cosmopolitan place filled with cultural offerings” (Dillon 2005) commercial elites could engage in the symbolic competition for position with a shifting hierarchy of places. That is, economic growth was seen as fundamentally tied to a set of non-productive investments in public patrimony. Further, as long as these institutions were funded by private philanthropy, and as long as symbolic competition was seen as central to competitive advantage, they benefited from broad-based support from urban elites.

The example of the Art Institute of Chicago is illustrative. Originally created in the 1860s as an artist-run residential organization, by the late 1870s it had run into financial and management problems. When a group of commercial and financial leaders were brought in to serve on a Board of Trustees, they forced “a decisive shift from a school run by artists to a multifaceted institution superintended by the city's mercantile elite” (ibid.). They emphasized developing a collection of art that “mirrored the ambitions and tastes of the institute's leaders... reflecting beliefs that a civic museum should feature masterpieces, a category then meaning original artworks from Europe” (ibid.). A new building, erected on a prominent lakefront site in 1893 and financed by real estate deals and public subscriptions (Sinkevitch 2004), announced the patrician aims of the Institute’s patrons with a Beaux Arts design that mimicked the great museums of London (the Victoria and Albert) and Paris (the Louvre) (Dillon 2005). The new institution was seen as so important to the city’s status that Aaron Montgomery Ward dropped his staunch opposition to development in Grant Park in order to have the museum see the light of day (Sinkevitch 2004, 14).

## A Contested Ideal: Growth Machines and Divisive Symbolism

Even as the ideals of investment in public capital expanded to encompass schools, public space, and arts and cultural institutions, that expansion was divisive and controversial. The very production of large-scale urban infrastructure is often destructive of the urban social fabric it seeks to enhance; to take a direct example in Chicago, critical roadways such as the Dan Ryan and Kennedy Expressways and key public investments such the University of Illinois’ Chicago Circle campus (now UIC) were only possible through a massive campaign of property expropriation and neighborhood demolition. That these urban renewal campaigns were

orchestrated by self-interested urban growth machines seeking to reward powerful political constituencies only added insult to injury. The enrollment of museums, cultural institutions, and anchor institutions such as universities as advocates for (or beneficiaries of) urban renewal further delegitimized the link between investments in public capital and the public good.

The notion that infrastructural investments would produce social conflicts even as they seek to unite urban populations was not limited to the urban renewal period. In the context of heightened inter-municipal competition since the 1970s, “creative city” discourses have reoriented urban development policy towards forms of public capital with the “the capacity to attract, retain and even pamper a mobile and finicky class of ‘creatives’, whose aggregate efforts have become the primary drivers of economic development” in the post-industrial era (Peck 2005, 740). In the eyes of creative city advocates, the critical infrastructures for urban economic growth are no longer bundled and universal, emphasizing communication, business location, or the least-cost movement of goods and services, but are rather those that enhance the “creative ecosystem” (ibid., 743) and “people climate” attractive to a new dynamic class of creative workers and entrepreneurs. What kinds of infrastructure align with wooing and retaining the creative class? According to Peck (2005, 745), creatives seek “the kind of amenities that allow them precariously to maintain a work-life balance, together with experiential intensity, in the context of those demanding work schedules.” As these often encompass the “soft” infrastructure of arts and culture, with lower needs for public investment compared to sports stadiums or convention centers, they have proven popular with cash-strapped municipalities looking to harness “infrastructures of play” for economic development (Judd 2001).

However, in their concrete forms these amenities share several controversial features. They tend to be geographically limited; rather than being spread equitably throughout the city, they tend to emphasize areas where Creatives cluster, such as affluent neighborhoods or emerging entertainment districts. They also often emphasize the leisure or consumption preferences of this small segment of the population: “play and consumption really matter here because creatives confront the unique challenge of fitting these in around their demanding work schedules, squeezing in a quick bike ride or latte at the art gallery before starting the second shift” (ibid., 745). Finally, as creatives are drawn to the “symbols of urban authenticity”, which “include ‘authentic’ historical buildings, converted lofts, walkable streets, plenty of coffeeshops, art and live music spaces, [and] ‘organic and indigenous street culture’” (ibid., 745), investments in public capital in support of the creative city often spur or reinforce gentrification and the displacement of low-income residents and businesses. To the degree that municipalities are increasingly pursuing creative city strategies for economic development, they have embraced investments in public capital with a significant capacity for controversy.

The recent storm over Chicago “606 Trail” – a rail-to-trail project on the city’s northwest side – offers an example. The 2.7-mile trail was originally conceived as a linear park that could remedy open space disparities in the low-income, Latino neighborhoods of Logan Square and Humboldt Park. Its design elements carried a substantial “cool” factor, capitalizing on the site’s status as a former industrial rail spur, and promising new connections for cyclists. However, by linking gentrified Bucktown and Wicker Park to the east with a set of low-income neighborhoods to the west, the trail has reframed perceptions of those neighborhoods’ desirability (Nolan 2015). The result has been a development rush, with a slew of new high-end

condo and rental projects seeking to capitalize on the allure of proximity to the trail (Smith et al., 2016). Whereas neighborhood groups initially focused on advocacy for the trail, they have now turned to organizing protests against land grabs by developers and the displacement of low-income renters (Bookwalter 2016). The controversy has shaped new awareness on the part of housing and community advocates of the socially divisive aspects of “cool” industrial reclamation projects (Greenfield 2016).

Another set of recent controversies – this time over public monuments to the Confederacy – has further served to remind us of another divisive aspect of public capital: namely, that it is often cloaked in a symbolism capable of fracturing the very integrative aspirations of the infrastructural ideal. Here, the focus shifts from the validation of public capital’s economic role to its affective and aesthetic qualities, and “how public sentiments of progress, modernity and wellbeing become attached to iconic buildings, highways, or new housing and shopping complexes, regardless of their functionality and material impact” (Amin 2014, 138). In examples such as the Art Institute of Chicago or other monumental edifices, the “emblematic material” references “an imagined commons of shared affects and assets supposed to iron out the divisions and differences of the everyday city” (ibid., 139). Nevertheless, this symbolic power is always socially selective. In the case of Confederate monuments, municipal and state governments from the late 19<sup>th</sup> through the mid-20<sup>th</sup> century enhanced their standing through mobilization of symbols referencing founding stories of the Confederacy and its imagined community of white southerners (“Confederate monuments”, 2017). In the wake of a wave of political protest around police treatment of minorities or local

deference to White supremacists, those symbols now stand as physical monuments to a divided polity.

## An Eroding Ideal?

Even as the infrastructural ideal has been promoted through election campaigns rhetoric dating at least back to the early 1990s, the underlying vision of infrastructure referenced by that rhetoric – integrated, innovative, universally accessible, essential to economic livelihood, and linked to the democratic public sphere – has been much harder to find at the programmatic level. Why has the infrastructural ideal receded from the policy landscape even as it retains such a significant rhetorical hold? There are at least two arguments we can examine to better understand the gap between the belief in the efficacy of infrastructure and the reality of shrinking investment: the turn to austerity urbanism; and the “assetization” of public capital through successive waves of privatization.

## Austerity Urbanism

First, fiscal circumstances have certainly worked to exacerbate the sense that integrated infrastructure is in a crisis.<sup>1</sup> The 1975 New York City fiscal crisis was a signal moment in this regard, helping to usher in a new set of controls on spending and borrowing that marked a decisive shift away from the city’s postwar commitment to public capital. The turn to austerity urbanism not only diminished new investments and ongoing upkeep of “hard” infrastructure,

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<sup>1</sup> As Bunch elaborates in her contribution to this collection (“Planning and Financing Infrastructure in the Trump Years”), “QUOTE.” The Trump administration’s calls for up to \$1 trillion in new infrastructure spending over ten years is emblematic; whatever the long-run payoffs in economic or social capacity, this level of spending .

but also increasingly targeted “soft” infrastructures as unsustainable in the face of increasing pressures on the public fisc (Peck and Whiteside 2016).

Moreover, austerity urbanism has specifically targeted one pillar of the infrastructural ideal: its reliance on a public-sector monopoly. For Graham and Marvin (2001, 43), the broad-based public qualities to urban infrastructure were sustained by their institutional location, situated as they were within the emerging modern professions of urban planning and public administration (cf. Boyer 1986). Just as importantly, the infrastructural ideal was sustained by the consolidation of the legal authority of the municipal corporation (cf. Frug 1980), which helped produce “public infrastructure monopolies” as part of Progressive Era apparatus of the local state. For O’Neill (2010, 5), these monopolies were central to the emergence of a Keynesian “infrastructure instinct” in the post-war period – a set of infrastructural capacities that flowed from “public acceptance of infrastructure funding and rollout as essential to the conduct of modern society” (ibid., 5). Whether housed in public works agencies or in quasi-public monopoly utilities, the design, delivery, and maintenance of infrastructure systems became central capacities for a bureaucracy whose role and status grew as “capital works funding [became] a fixed category in the pages of government budgets” (ibid., 5). With unionization of front-line workers, this capacity became entrenched in collective bargaining arrangements as part of “an infrastructure profession – with its skills, documents, books and working implements” capable of “[ensuring] a reliable and continuous corporate memory of how to create and enact infrastructure projects in an orderly, sequenced and continuous fashion” (ibid., 5). As public monopolies and public-sector unionization have come under attack

as inefficient and fiscally unsustainable, this memory and its attendant capacity have been eroded.

## Turning Infrastructure into a Financial Asset

The attack on public agencies and public workers did not result in a smaller bureaucracy dedicated to infrastructure provision. Rather, O'Neill (2010, 6) notes "a persistent and significant re-engagement with infrastructure inside the state apparatus over at least the last two decades." What has shifted is the form of that bureaucracy and the way that it approaches investment in public capital. In the United States, this shift began in the Reagan Administration, which created a Commission on Privatization in 1987 to examine ways to "return government programs and assets to the people" (Brinkley 1987). In the early 1990s under President Bush, these initiatives were picked up in more specific proposals and incentives to privatize infrastructure assets. The arguments mobilized in favor of privatization of infrastructure were three-fold: private owners/operators have inherent efficiencies that public sector operators lack; a belief in the pricing mechanism as a more efficient means of allocating infrastructure<sup>2</sup>; public financing of infrastructure (due to its low cost) was "a barrier to the achievement of economic efficiencies through additional private market financing or competitive practices, or both" (Bush 1992). Early state initiatives to privatize new road construction (for instance, in Virginia) retained a public utilities model, with private operators facing regulation by a state commission.

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<sup>2</sup> "User fees are generally more efficient than general taxes as a means to support infrastructure assets" (Bush 1992).

However, states and localities quickly found that such an approach had limits, and that private investment was most likely to flow when infrastructure was structured as an unrestricted private commodity. Even as shifts towards this model were often grounded in economic arguments regarding efficiency of private sector operation, or even more fundamentally in the superiority of the pricing mechanism (such as the toll) as a means of allocating public goods, they had broader effects not anticipated by their boosters. Most notably, they involved an underlying shift in the very notion of infrastructure.

This is a shift from a device capable of generating (and then the financing, construction and provision) a public-capital good, based on a concept infused with universality; and designed to integrate cities and regions, add cohesion to social and economic communities, provide free positive externalities, counteract or minimise the negative externalities of private pursuits of the city – like driving a private motor car – and, when required, deliver Keynesian economic stimulus, via the construction sector, to lagging regions (O’Neill 2010: 7).

Under successive waves of privatization, the notion of infrastructure that emerges is quite different: redefined as an “asset” (Bush 1992), each infrastructural item or subsystem becomes defined by its discrete earnings potential, and by its risk-return profile relative to other large-scale, long-term private investment opportunities (O’Neill 2009, 175). Further, with the increasing role of investment banks in purchasing and financing infrastructure concessions in the 2000s, this earnings potential itself becomes a financial commodity “capable of being bundled into repeated earnings-generating financial products” (ibid., 175).

This “assetization” of urban infrastructure has implications on two fronts. First, it is highly selective, prioritizing those sectors or areas of the city that match investors’ expectations regarding risk and return. Second, it actively works against the aspiration to bundled, universal infrastructure. Private concessions often work by enhancing infrastructure’s scarcity, employing

steep increases in user fees to ensure appropriate revenue growth for investors (Ashton, Doussard, and Weber 2012). Further, assetization creates barriers between infrastructural subsystems that impede integrated planning. Here, we can take yet another example from Chicago, that being the city's 2008 75-year lease of its street parking meters to a consortium led by the investment bank Morgan Stanley (Ashton, Doussard, and Weber 2016). In handing over management of street parking to private operators, the City committed to ensuring that it did not affect the concessionaire's earnings stream through "adverse" events such as street closures. Only a few years into the concession, this has exposed conflicts with key urban management functions – ranging from regular road maintenance to street festivals – that did not exist under earlier modes of service delivery. Further, monetizing the parking system as an infrastructure asset has created new barriers for integrated transportation planning; for instance, to the extent that bike lanes and bus rapid transit initiatives would reduce the stock of parking spaces on certain arterials, they would require new financial commitments from the city to compensate private concessionaires – commitments that are increasingly difficult to justify under austerity urbanism (Farmer 2014).

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