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## IN WHAT SENSE SUBURBAN INFRASTRUCTURE?<sup>1</sup>

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*What, if anything, is held in common across infrastructures as diverse as waste, roads, and trains? And between urban contexts as different as Jakarta, Mumbai, Kampala, Newcastle, and Ramallah?*  
(Graham and McFarlane, 2015, pp. 12-13)

### **(Moving Beyond) Suburban Infrastructure as a Chaotic Concept**

Suburbs, as the contributions across this volume attest, display a wide and varied abundance of infrastructure. Hard infrastructures, including highways, rail tracks, airports, intermodal yards, oil refineries, power plants, power and fiber optic cables, sewers, and sanitation systems, are crucial – if often inconspicuous – constitutive elements of variegated global suburban landscapes. At the same time, multifaceted social (or soft) infrastructures – the formal institutions and informal practices employed by various actors from national governments to street vendors – fundamentally condition the capacities of people living in, and moving through, suburban places (Simone, 2004). These social and technical systems underpin the growth and experience of ‘the suburban’ by mediating resource flows to, and across, the urban periphery. The provision, maintenance, and governance of transportation, energy, water, and waste systems (or lack thereof) established the conditions for the historical expansion of urban spatial forms and the integration/marginalization of peripheral communities into the wider urban fabric (Gandy, 2003; Law, 2012; Warner, 1978). Contemporary constellations of global suburbia – from large-scale capital intensive developments and swiftly expanding informal settlements to declining inner-ring communities – continue to evolve in a symbiotic, fundamentally politicized, relationship with their infrastructure networks (McFarlane and Rutherford, 2008). As processes of suburbanization occupy a central position in the rapid and on-going urbanization of the planet, suburban space is a crucial frontier of infrastructural innovation and stress that will deeply shape the future potentialities and challenges of cities, suburbs, and an urbanizing world more broadly (Keil, 2013).

A robust literature now utilizes infrastructure as a critical object of analysis to think through the politics, social relations, and everyday experience of urban life (e.g. Angelo and Hentschel, 2015; Graham and McFarlane, 2015; McFarlane and Rutherford, 2008; Young, Wood, and Keil, 2011). However, the extended and networked nature of infrastructure systems, their sheer diversity and modes of configuration, and their contingent embedding in varying geographic contexts presents conceptual and methodological challenges for critical and comparative urban studies. Reflecting on the case studies curated in their edited volume, *Infrastructural Lives* (and the questions posed in the above epigraph) Graham and McFarlane (2015, p. 13) observe “a tendency for infrastructure studies to focus on particular infrastructures... [with] little held in common beyond infrastructure itself as a set of material processes”. Such concerns raise a further epistemological question for analyses of global suburban infrastructure, namely: is there anything analytically distinct about *suburban infrastructure*, or the social, technical, and political regimes that singularize the ‘suburban moment’ in their production, governance, or use? Suburban expressions of the urban process are highly pluralized, contextual, interconnected, and endogenous. If the sheer variety (in nature, form, and temporal development) of global suburbs inhibits the construction of universal or all-encompassing definitions of ‘the suburbs’ (Charmes and Keil, 2015; Harris, 2010; Phelps, Wood, and Valler, 2010; Walks, 2013), strong theorization is necessary to prevent ‘chaotic conceptions’ robbing ‘suburban infrastructure’ of its analytical significance (see Sayer, 1992).

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<sup>1</sup> The argument presented here draws in part from Addie, J.-P. D. (2016). “Theorizing suburban infrastructure: A framework for critical and comparative analysis”, *Transactions of the Institute of British Geographers*, 41(3), 273-285.

This is an important and profoundly political task. Our understanding of the relationship between infrastructures and suburban space (and comparability between instances) is critical to addressing questions of politics, governance, and the applicability of mobile infrastructure policy frameworks not only between metropolises (Chennai, Stockholm, Toronto...) and technologies (energy, transport, governance...), but within the heterogeneous internal structures of these urban agglomerations. Investment in the core infrastructures of developed and emerging urban societies may be heralded as state spatial strategies to enhance the territorial competitiveness and resilience of metropolitan regions and national economies, but access to infrastructure and the experience of its failures are highly uneven and unequal. Infrastructures invoke dialectics of inclusion/access and exclusion/marginality. Gridlock, blackouts, crumbling bridges, and leaking pipelines are now a commonplace feature of suburban life, but one whose experience and impacts are dependent upon individuals' and groups' differentiated spatial relations and position relative to dominant power geometries (Graham, 2010). We therefore need to problematize assumptions about our knowledge and experience of, and engagement with, 'suburban infrastructure' to realize its potential analytic utility amidst the maelstrom of contemporary urban growth.

The aim of this chapter is to develop an analytically meaningful framework to analyze 'suburban infrastructure' by paying concerted attention to how infrastructures relate to the production and experience of dynamic and highly variegated suburban environments. My approach is built around two conceptual triads: the first unpacks the modalities of infrastructures as they exist in, for, and of suburbs (broadly understood as the landscapes of extended urbanization); the second discloses the political economic processes (suburbanization), lived experience (suburbanism), and dynamics of mediation internalized by particular suburban infrastructures. I am not concerned with the tasks of ensuring definitional rigor or bounding what does and does not constitute 'suburban infrastructure'. Rather, I seek to identify adaptable conceptual and methodological innovations from the distinct *relations* between the suburban and any number of hard and soft infrastructures facilitating social processes and relations across space. The conceptual framework presented in the following is intended to be open and adaptable to the specific geographical context, infrastructures, and conceptual languages (from edge- and in-between cities to banlieues and favelas; exopolis to post-suburbia) under empirical investigation. In doing so, it opens avenues to cut through the fuzziness presented by a cacophony of suburban and infrastructural signifiers to: (1) realize greater conceptual clarity when discussing the suburbanity of infrastructures and their associated actors, economies, and cultures; (2) facilitate and promote comparative analysis across diverse global suburban contexts; and (3) develop tools to analytically foreground the dialectical relations internalized in the concrete forms, configurations, and governance of suburban infrastructures. I concretize this argument by briefly unpacking the politics of rail infrastructure in the Chicago region, focusing on the changing modalities of suburban infrastructure surrounding the 2007-2009 acquisition of the Elgin, Joliet and Eastern Railroad by the Canadian National Railway.

### **Theorizing Suburban Infrastructure: A Framework for Analysis**

I begin from the proposition that the suburbanity of infrastructure derives from more than its location in a suburban environment. As technical, social, political, cultural, and economic entities, infrastructures invoke a multifaceted and interconnected amalgam of sociospatial relations and consequently, not all infrastructure located in suburbs is suburban, and not all suburban infrastructure is to be found in suburbs themselves. After all, there is nothing necessarily suburban about an airport, a power station, or a fiber optic cable, but an airport may be governed by a regional authority strongly influenced by suburban municipalities; a power station may provide the necessary electricity to support non-central urban growth; fiber optics cables might enable the enhanced securitization of gated communities on the edge of the city. In order to grapple with the specificity of suburban infrastructure, we need to unpack the

imbricated ways in which nominally understood infrastructures may be: (1) physically embedded in suburban landscapes; (2) produced and performed through place-based suburban governance and sociospatial dynamics; and (3) supportive of suburbanization and suburban ways of life. In other words, we can consider a tripartite division between suburban infrastructure as artifacts and systems *in*, *of*, and *for* suburbs:

- *Infrastructure in suburbs* are principally suburban as a consequence of their physical location in a suburban environment. Such infrastructures may be embedded in suburban places but the flows they territorialize and their primary functional logics are not contingent on this suburban positioning. Rather, higher order restructuring aligns them to alternative scales of mobility and political economies conditioned elsewhere. Here, we can consider the constituent infrastructural elements facilitating the suburbanization of global distribution and logistics industries – intermodal terminals, international cargo airports, major trucking highways, extended landscapes of warehousing and distribution facilities – as a case in point (see Keil and Young, 2008). These infrastructural artefacts are clearly attuned to processes of globalization rather than essentially suburban in nature. Yet their physical presence and the imperatives of global competitiveness guiding their planning, operation, and governance do significantly shape the lived experience, development trajectories, and spatial imaginaries of the suburbs that house them; whether opening economic development opportunities (Cidell, 2011) or exposing communities to negative externalities; risks, vulnerabilities, and disruptions (Cowen, 2014).
- *Infrastructure of suburbs*, by contrast, are chiefly determined by suburban institutions, communities, landscapes, and governmentalities. They can arise through formal channels structured by local governance, funding, maintenance, and operation. For example, suburban municipal ownership – whether directly, or through special taxing districts – can create particular infrastructure systems (e.g. regional transport authorities, municipal water boards, forest preserves) that mobilize claims of power and authority over territories both near and far. ‘Infrastructures of suburbs’ may also be developed through the informal arrangements and practices of users of suburban space; for instance, communities responding to deficiencies in ‘infrastructure deserts’, as McFarlane et al. (2014) discuss with regard to sanitation systems in Mumbai’s informal settlements. We can approach the ‘infrastructure of suburbs’ both through the production, lived experience, or appropriation of networked space, and discourses that construct suburbs in relation to infrastructures normatively understood as ‘suburban’ – e.g. auto-mobility as a suburban way of life (Walks, 2015); homeownership, privatism and neoliberal spatial polity (Peck, 2011).
- *Infrastructure for suburbs*, finally, are the material and social elements shaping the resource flows necessary to support suburban growth and ways of life. Processes of suburbanization are enabled through extended infrastructure networks that reach beyond suburbs as a territorially- or morphologically-defined spatial form. ‘Infrastructure for suburbs’ tie suburban space and society to central cities through systems supporting traditional economic and land-use patterns and new infrastructural arrangements that condition the functional integration of polycentric urban regions. At the same time, the metabolic demands of suburbs (for water, waste management, energy etc.) construct distant geographic landscapes as infrastructural prerequisites for suburban development and reproduction (see Swyngedouw, 2006). Infrastructure for suburbs’ may thus be framed, following Brenner (2014, p. 5), as the “operational landscapes” of global suburbanization.

This initial schema, I suggest, is particularly useful in two regards. First, it extends our engagement with the complex spatiality of suburban infrastructure beyond the territorial confines of ‘the suburbs’ themselves. The distinct topological relations and propinquity disclosed

in each categorization illuminates the necessity of incorporating multiple scales of analysis into any examination of suburban infrastructure. Artefacts understood as ‘infrastructure in suburbs’ might be aligned to broad scale of urban development, but still play a vital role in shaping the identity, functionality, and politics of individual suburbs by bounding, enclosing or dividing space; physically demarcating the ‘wrong side of the tracks’. Second, it draws attention to questions of ownership, governance, and the intent of social and political action. Since individual artefacts and specific systems may internalized multiple scales of urban development and rhythms of mobility, they can invoke distinct and competing political claims (e.g. around issues of NIMBYism versus the demands of regional competitiveness). As a result, infrastructures in, of, and for suburbs cannot be considered as mutually exclusive. Rather, they provide a conceptual framework to examine the uses, relations, and ambiguities emergent across the sociotechnical palimpsest of global suburbia.

Considering suburban infrastructures as *things* (broadly considered) relative to suburban space, though, only offers a partial viewpoint; one that does not adequately account for the (sub)urban *processes* giving rise to an ephemeral and transitory amalgam of highly differentiated landscapes (Keil, 2013, p. 9). Refocusing our attention on the processes internalized in particular infrastructural configurations exposes generative moments of social action and spaces of political practice. Suburbanization is then revealed to be an active and contested moment in the overall process of urban transformation. Here, we can draw a second set of distinctions between the political-economic, experiential, and mediatory dimensions of suburban infrastructure. Again, these categories are not mutually exclusive or ontologically separate. Instead, they are operationalized through a relational ‘three-dimensional dialectic’ that offers distinct epistemological vantage points onto the contradictory structuring imperatives, governance, experience, and politics of suburban infrastructures (after Lefebvre, 1991, p. 39):

- *Infrastructure of suburbanization* promotes and supports increases in non-central-city population and economic activity and the spatial expansion of urban constellations. The central focus here is infrastructure’s role in the suburbanization of capital and the political-economic process that facilitate capital production, consumption, and circulation that underlie the form and function of suburban space. These include both hard artefacts (e.g. pipelines, water systems, and transportation lines) and soft structures (e.g. mortgage regulatory frameworks and ‘innovations’ in financialization) that engender urban spatial expansion and establish the grounds to support particular spatial fixes. This categorization therefore draws our attention to the governance modalities of capital and the state – often through the work of the development industry (see Hayden, 2003) – as contextualized within broader trends and urbanization regimes.
- *Infrastructure of suburbanism(s)* are appropriated and repurposed through suburban spatial practice to construct qualitatively differentiated expressions of suburbanism as a way of life; experienced not just in place, but as a place. Since infrastructures require the co-production of the subjects who make use of them – in fluid and unpredictable ways (Höhne, 2015) – ‘infrastructures of suburbanism’ are integral to both the suburbanization of consciousness and the suburbanization of everyday life. They are further generative of governmentalities of authoritarian privatism or emancipation, to the extent that they interpolate inequalities, power relations, or the commodification of suburban space (Ekers, Hamel, and Keil, 2012). In this sense, ‘infrastructure of suburbanism’ can be understood as the infrastructural components attached to formation and social reproduction of suburban lifestyles, and the construction of peripheral urban locales as distinct spaces of habitation, work, and play (see Walks, 2013 for a detailed discussion).
- *Mediatory infrastructure* articulates suburban constellations within the multiscale dynamics of contemporary urbanization. Drawing from Lefebvre’s (2003, p. 80) theorization of the urban as a “mixed” or “mediatory” level (not scale), suburban ‘mediatory infrastructures’ perform the role of connecting and resolving abstract yet essential social relations and

the concrete spaces and practices of everyday life. They are sociomaterial practices that bridge between “two epistemological moments within an ontological unity: one we experience – [sub]urbanism [the lived experience of suburban space] – the other we don’t – [sub]urbanization [as a political economic process] – but we know it really exists nonetheless” (Merrifield, 2002, p. 160). ‘Mediatory infrastructures’ shape our knowledge and experience of broad social dynamics and relations. They open analytic avenues to identify forces, spaces, and relations that might transcend the dialectical tensions between suburbanization (exchange-value) and suburbanism (use-value) and in doing so, highlight the transformative capacity of infrastructure to puncture new centralities (that can be multiple, fragmented, and overlaid) into seemingly rote and homogeneous landscapes. The mediatory processes internalized in suburban infrastructures may also expose the ways in which suburban space is physically, discursively, and politically embroiled into the wider spatial and temporal dynamics of urban development. For example, suburban municipalities might draw on national infrastructure funds (such as those rolled out following the 2008 Financial Crisis) to improve local transportation systems and local economic competitiveness, or, conversely be folded in to policy and political discourses articulated at broader scales, as Cochrane et al. (2015) argue in the case of housing in southeast England.

Individually, the epistemological vantage points offered by examining infrastructures as in, of, and for suburbs, and as internalizing suburbanization, suburbanism, and mediation, enable us to begin to unpack ‘suburban infrastructure’ as complex concretions of spatially and temporally specific uses and social relations. We can abstract further insights by considering these triads in light of each other (following Harvey, 2006). The resulting nine cell matrix, shown in Table 1, discloses the intersections of distinct modalities, materialities, and social relations embedded within particular suburban infrastructures. As the suburban moment is perceived, conceived, and lived in partial and fragmented ways by different people at different moments, juxtaposing the multiple dimensions of suburban infrastructure presents alternative epistemological lenses to disclose the dialectical relations and points of tension emerging at the suburban-infrastructure nexus. Tensions can be temporal as well as spatial, both within and across cells. We can then theorize, for instance, transitions between prevailing ‘infrastructures of suburbanization’ –e.g. from ‘distributive’ to ‘parasitic’ urbanization (Beauregard, 2006) – or trace the infrastructural preconditions supporting emergent and competing ways of suburban living (see Walks, 2013). The content of the cells within this matrix are not exhaustive and their specific content will depend on the particular theorization (of suburbs and infrastructure) and empirical case under investigation. In this light, it is useful to consider a concrete example of how infrastructure relates to suburban space and social practice.

[TABLE 1 HERE]

#### **Reading Suburban Infrastructure: The Case of the Elgin, Joliet and Eastern Railroad**

In October 2007, Canadian National Railway (CN) submitted an application to the United States Surface Transportation Board to purchase the Elgin, Joliet and Eastern Railroad (EJ&E); a beltline railroad located approximately 40 miles from downtown Chicago. The EJ&E’s tracks bisect the spectrum of the region’s suburban fabric: passing at-grade through the predominantly affluent, White municipalities to the northwest of Chicago (including Lake Zurich and Barrington); the increasingly diverse satellite cities of Waukegan, Elgin, Naperville, and Joliet; the exurban fringes of DuPage, Kane and Kendall counties; and the lower-income and largely Black industrial suburbs south of Chicago and in northwest Indiana. CN’s application exposed the inherent tensions between Chicago’s function as a regionalized global port and multifaceted space of habitation. Actors operating in and over this diverse suburban terrain related to the railroad in divergent ways. The contested politics of infrastructure they subsequently mobilized

provides a constructive lens to illuminate the complexities and challenges of analyzing and adequately theorizing ‘suburban infrastructure’.

### *Suburbanizing the Infrastructure of Globalization*

CN’s primary goal in acquiring the EJ&E was to use the Railroad as a bypass to reroute intercontinental intermodal freight trains from the highly congested tracks converging on North America’s historical rail hub. The deal, which was approved on 24 December 2008 and became operationally effective on 1 February 2009, firmly embedded the EJ&E within CN’s continental network and attuned it to the scalar logics and economies of globalization. Its material holdings were incorporated into a more efficient and economically competitive cargo corridor linking the oil-rich Alberta Tar Sands to refineries and ports along the Gulf of Mexico. The purchase enabled CN to relocate switching operations to Indiana and convert their Gateway Yard in south-suburban Harvey, Illinois to a fully-intermodal facility expected to accommodate an increase in containers handled from 350,000 to over 2 million per year. Moreover, the governance and use of the line would be dictated from Montreal rather than Gary, Indiana, in a move that further distanced it from the suburban communities through which it passed.

The CN takeover also meshed with a wider push towards railroad rationalization and modernization in Chicago that firmly recalibrated the EJ&E as an ‘infrastructure in suburbs’ in the first instance. By the mid-2000s, the City of Chicago, State of Illinois, and the Association of American Railroads had established the Chicago Region Environmental and Transportation Efficiency Program (CREATE, 2005) through a landmark multi-modal public-private partnership. The \$3.2 billion CREATE initiative forwarded a set of projects eliminating rail junctions and grade crossings within Chicago’s municipal borders that, along with CN’s EJ&E rerouting, would help reduce the negative externalities of freight activity in the heart of the global city. CREATE garnered the support of a broad coalition of regional interests; from business elites and public officials (including suburban representative through the Metropolitan Mayors Caucus) to urban community groups who welcomed its proposed improvements to public safety, air pollution, and commuter rail service. In addition, the Chicago Metropolitan Agency for Planning (2010) advocated for a national vision and federal freight program, which would support improvements for regional goods movement and integrate freight needs into infrastructure prioritization as part of a commitment to improve freight policy.

### *Oppositional Suburbanisms*

The picture was less rosy for the suburbs facing a dramatic increase in freight movement along the EJ&E right-of-way (from 5 to over 20 trains per day). In response, a coalition of suburban communities (including municipal and county officials from northeastern Illinois and northwest Indiana) organized as The Regional Answer to Canadian National (TRAC) to oppose the EJ&E acquisition and ensure both CN and the STB adequately addressed the adverse effects of the deal on their local interests. While TRAC contested claims regarding the beneficial economic and employment contribution the acquisition would have for the region, their chief concerns reflected the changing impact of the railroad as an ‘infrastructure of suburbanism’. These manifested around issues of noise and air pollution, increased delays at the 133 at-grade crossings along the line, public safety and health risks, disruption to commuter rail service, and depreciated property values (The Regional Answer to Canadian National, 2014). For Cidell (2015), this reactionary conservatism, particularly among affluent communities northwest of Chicago, represented something more than residents dealing with the negative impacts to their everyday spatial practices. Rather, the suburbanization of freight rail cracked the social and political fallacy of a disconnected and autonomous mode of suburbanism:

The noise and emissions of CN trains would be a reminder that they [suburbanites who had fled from the hassle and congestion of the city] are still part of an urban area, with all the economic and social inequality that entails, as much as they have tried to avoid it.

Moreover, a decline in property values might make it possible for previously excluded people to afford the same sanctuary, reducing its exclusivity and desirability (ibid, p. 145). Yet public officials from the booming satellite towns and edge cities adjacent to the EJ&E also had reason to object to the impact of the CN's use of the EJ&E as an 'infrastructure of suburbanization' which threatened their urbanizing development agendas. Delays at railroad crossings and rising levels of air and noise pollution are not conducive to enhancing the economic attractiveness of aspiring suburban municipalities. Importantly, elevating global and trans-continental freight movement over local mobility regimes jeopardized plans for The Suburban Transit Access Route (STAR Line), a proposed regional commuter rail service connecting major regional employment centers and satellite towns from Joliet, Aurora, and Elgin to O'Hare International Airport using sections of the EJ&E, which has received popular backing across the Chicago region.

### *Reclaiming Suburban Infrastructure*

In contrast to TRAC's vehement opposition, the EJ&E takeover posed a more complex question in Chicago's south suburbs. These communities faced comparable traffic delays, safety concerns, and disruptions to their everyday lives, but CN's investment in local intermodal facilities presented an opportunity to transform their economic prospects (as an 'infrastructure of suburbanization') and quality of life (as an 'infrastructure of suburbanism'). Here, the South Suburban Mayors and Managers Association (SSMMA) – an intergovernmental agency providing technical assistance and collaborative services to 42 municipalities in southern Cook and Will Counties – in partnership with the Center for Neighborhood Technology (CNT), the Metropolitan Planning Council, and the Delta Institute, developed proposals to reimagine and reposition the economically distressed southern suburbs of Chicago as a green manufacturing cluster (Center for Neighborhood Technology, 2010). The Southland Chicago 'Green TIME Zone' seeks to leverage the region's extant transportation infrastructure and manufacturing facilities to generate 13,400 new jobs, \$2.3 billion in new income, and \$232 million in new tax income for the Chicago region (ibid, p. 14). At its core, discursively and physically, sits CN's expanded Gateway Terminal and the increased cargo flowing along the EJ&E right-of-way. The proposal's targeted industrial core, 'Logistics Park Calumet', contains in excess of 1,300 acres of vacant or underutilized land within four miles of Gateway Terminal (ibid, p. 6).

In order to produce desirable neighborhoods, high-skilled employment opportunities, and environmental improvements, the Green TIME Zone forwards a tripartite strategy integrating: (1) transit-oriented development (TOD); (2) cargo-oriented development (COD); and (3) green manufacturing. Each of these mechanisms is dependent upon its own extended infrastructures of, and for, the south suburbs. TOD needs coordinated zoning practices and land banking to direct growth and curtail entrenched modes of sporadic sprawling suburbanization. Corridor development and community stabilization therefore relies on high levels of political engagement and collaboration between municipalities to address perceptions of a zero-sum competition for inward investment among suburban municipalities. COD seeks to capture the economic benefits and positive externalities of intermodal freight movement by attracting companies looking to take advantage of reduced shipping costs and greater reliability. The development of both hard and soft 'mediatory infrastructures' is necessary for a project like 'Logistics Park Calumet' to effectively integrate local markets into broader international accumulation regimes. These include investments in the built environment to remove spatial barriers to accumulation, and the creation of institutional and regulatory infrastructures capable of handling foreign trade (customs inspection stations etc.) while ensuring firms comply with environmental remediation standards. Green manufacturing, in turn, requires the formation of an economic development infrastructure to support regional supplier integration and product capacity support, provide workforce training to refocus local skills base towards alternative energy production, and marketing strategies to promote the Green TIME Zone cluster



internationally. All, however, depend upon the mobilization of a cross-sectoral and multi-governmental financial infrastructure. To this end, Scott Bernstein (2013), co-founder and president of CNT, notes:

The [Green TIME Zone] has also created a fund to help finance the land acquisition and pre-development infrastructure costs associated with cargo-oriented and transit-oriented redevelopment; Cook County used a HUD Section 108 loan guarantee against future Community Development Block Grant apportionments for a cargo- and transit-oriented land bank; and the Illinois General Assembly approved a new kind of tax increment financing for the target area against the income tax anticipated from new jobs created, in contrast with the typical TIF against anticipated property tax receipts.

The diverse fiscal mechanisms and scalar being mobilized here clearly demonstrate that any attempt to locally reclaim this logistics and distribution landscape is dependent upon the contingent nexus of globally-oriented rail infrastructure and existing, but underutilized, industrial capacity ('infrastructure in suburbs') and a far-reaching constellation of actors ('infrastructure for suburbs') to realize the foundations for sustainable local economic development ('infrastructure of suburbs').

### *The EJ&E as Suburban Infrastructure*

Following the conceptual framework laid out earlier, we can represent what is distinct about the EJ&E as 'suburban infrastructure' in Table 2. While the EJ&E takeover bolstered both CN's global logistics network and discourses of resilient regional competitiveness in Chicago, the use and governance of the EJ&E became codified, politically and discursively, as a suburban issue. Suburban communities would be the ones experiencing the disruptions caused by the suburbanization of global logistics activities, but they could also be the beneficiaries of new modes of suburbanization catalyzed by CN's investment; the 'mediatory' dimensions of suburban infrastructure reconfiguring the development potential, ground rents, and economic base of declining industrial inner suburbs. The competing visions and practices of global freight movement, local mobility, and the lived experience of suburban space render the notion of suburban infrastructure as highly imbricated across space and between scales. Those looking to appropriate the EJ&E for local economic development purposes, consequently, have needed to walk a fine line between the fractious politics of their local stakeholders and the disciplinary logics of globalization that had rendered the CN sale a fair accomplishment. Analytically, the ability to dialectically read across the cells of the matrix in a non-hierarchical manner proves particularly important here as it not only prohibits focusing on a single modality, but demonstrates how different social groups can hold widely differing perspectives on, and politics of, suburban infrastructure. There is no singular 'suburban' moment and perspective. Rather, there is an ongoing negotiation over the production, knowledge, and appropriation of both infrastructural artefacts and the urban process more broadly. As a result, the EJ&E, as a suburban infrastructure, is revealed to be an active element in the production and articulation of contested suburban spaces and social practices, but one whose internalized processes and relations are understood to be readily comparable to other suburban infrastructural constellations and political struggles over their provision, governance, and use.

[TABLE 2 HERE]

### **Conclusion**

Through this chapter, I have argued that what is held in common between diverse suburban environments and distinct infrastructural systems are the (sub)urban relations internalized within particular 'suburban infrastructures'. In theorizing these relations through a complementary framework of *infrastructure in/of/for suburbs* and *infrastructure of suburbanization/suburbanism/mediation*, I have outlined an approach to recognize and engage the

unpredictable and over-determined nature of both suburban infrastructure and suburban space. This is not to suggest we arrive at a normative, essential, or readily transferable definition of 'suburban infrastructure'. Particular infrastructures are multifaceted and multiscalar entities constructed by complex governance regimes, contested by diverse stakeholders, and are generative of distinct social norms. Their concrete articulations are highly varied and experienced in divergent ways by different people. As a result, we require flexible conceptual and comparative tools capable of adapting to the distinct ways in which infrastructures are constructed as problems and potential solutions within the polycentric milieu of global suburbanization. Focusing on the relations between infrastructures and their suburban moment directs investigations towards common and transferable abstractions founded upon sociospatial relations, rather than the contingent attributes of artefacts and systems in isolation. This forms the basis for robust comparative theory across pipelines, sanitation systems, cultural norms, and governance institutions, and edge cities, post-suburbs, in-between spaces, or ethnoburbs in the Global North or South. Taking seriously the question 'in what sense suburban infrastructure?' also foregrounds the political dimensions of such analysis within and across cases. Unpacking the unequal power relations and differential knowledges of suburban infrastructure through the framework presented above elevates issues of scale and centrality in the study of suburban infrastructures. In doing so, we are pushed to consider how actors operating across multiple scales articulate and operationalize claims to suburban infrastructures in practice, and how we might reimagine them to claim 'the right to suburbs'.

Tables:

Table 1: Matrix of suburban infrastructure (Addie, 2016)

	Infrastructure of Suburbanization	Infrastructure of Suburbanism	Mediatory Infrastructure
<b>Infrastructure in Suburbs</b>	<p><b>Higher order infrastructures as they facilitate suburban expansion:</b> Splintered premium networks, bypasses (uneven development); National electricity grid, power cables, fiber optics etc.; Infrastructure produced, maintained and governed by higher order agencies/scales, but facilitating suburban expansion; Residual elements of previous spatial fixes, remnant space of Fordism</p>	<p><b>Higher order infrastructures as they shape suburban life:</b> Post-suburban growth/mobility hubs ('urbanity' via densification); Car parks and big box retail power centers promoting new consumption practices; Residential university campuses; Greenbelts; Residual elements of previous spatial fixes (path dependent social practice); Infrastructures as alienating, (dis)connecting; Sites of risk, vulnerability, and opportunity</p>	<p><b>Higher order infrastructures integrating suburbs into broader networks (and vice versa):</b> National highway networks; Airports; Trunk rail lines; Global logistics centers and intermodal terminals; Infrastructure as symbolic markers; Corporate headquarters/science parks/office campuses; Acts of bounding, enclosure, separation (within the context of post-metropolitan, regional, and postcolonial urbanization)</p>
<b>Infrastructure of Suburbs</b>	<p><b>Place-based infrastructures supporting suburban growth:</b> Streets, sewers, bus routes etc. developed, maintained, and governed by local authorities; Claims over territory and growth-oriented politics; Special taxing districts; TIFs, tax breaks and financial incentives for developers; Localized housing development (physical form) and planning codes (regulatory institutions); Rezoning</p>	<p><b>Place-based infrastructure as they shape everyday spatial practice:</b> Suburban community and advocacy groups; Appropriation and reimagining of (formal and informal) built forms and institutions by suburban inhabitants; Implementation of informal sanitation systems in peripheral urban areas of the global South; Desire lines; Car-pooling; Wired connectivity as community; Suburbanity as perceived, lived by suburban inhabitants; Gerrymandering</p>	<p><b>Use of place-based infrastructures as spaces of mediation, centrality, difference:</b> Adapting strip malls for transnational cultural networking and events; Utilization of remnant spaces of Fordism for new, just-in-time practices (new territorialities and topologies); Position of suburban institutions in urban/global governance mosaic; Local partnerships to access national government financing; Inter-suburban economic competitiveness, attempts to locally capture global capital</p>
<b>Infrastructure for Suburbs</b>	<p><b>Sites and spaces of extended (sub)urbanization:</b> Reservoirs and pipeline in non-local watersheds; Auto-manufacturing centers, subsidies for cheap oil/gas; Institutions of financialization, mortgage companies; Private property rights and legal arrangements; Regional or national planning bodies and strategies; Federal/State support for homeownership, construction of new sustainable housing stock</p>	<p><b>Extended infrastructures structuring suburban ways of life:</b> The development of political movements to address peripheralization, automobilities etc., at multiple scales; Lobbying around the 'war on cars'; Struggles over appropriate forms of transport, service provision; Regional commuter-sheds; Google buses; Commodification of distant resources (oil fields, rainforests) in order to meet demands of suburban lifestyles; Hollywood and US commercial film industry representations</p>	<p><b>Extended infrastructure of suburban (dis)connectivity:</b> Suburbanity as relational; Integration into global flows for suburban capital; Mechanisms articulating suburban labor markets into wider networks; Topological connectivity; Co-constituted suburbs and the spaces they support; Expressway off-ramps; Resource wars; Global financial and regulatory agreements (coordinated through the IMF, OECD, EU etc.); Potentiality of the 'Right to the Suburbs'</p>

Table 2: The EJ&E Railroad as Suburban Infrastructure

	<b>Infrastructure of Suburbanization</b>	<b>Infrastructure of Suburbanism(s)</b>	<b>Mediatory Infrastructure</b>
<b>Infrastructure in suburbs</b>	Physical rail and road infrastructure, intermodal yards, warehouses; Investment in Gateway Terminal opening employment opportunities and local revenue streams; Built environment of extended metropolitan growth; Potential sites for industrial development; Transformations in built form, urban morphology, increasing ground rents for industrial activity.	Traffic delays at at-grade crossings shaping commuting patterns from Barrington to NW Indiana; Negative impacts on quality of life, noise and air pollution, impact on property prices; Questions of safety and risk of freight movements; Positive impacts on quality of life, potential for economic development, improvement in housing stock and opportunities for industrial retraining.	CN as continental rail infrastructure integrating local intermodal and distribution facilities and global economy; Rail infrastructure providing goods and flows that support the Chicago region's growth, attractiveness, and quality of life. Embedding EJ&E purchase within broader regional railroad politics (CREATE), removing unwanted freight activity from city to the suburbs, psychological connection/fragmentation of regional space
<b>Infrastructure of suburbs</b>	Local attempts to claim the development trajectory of the south suburbs (SSMMA and the Green TIME Zone); Municipal tax breaks for green manufacturing companies; Housing development (physical form) and planning codes (regulatory institutions) to support TOD and COD; Opposition to modes of suburban growth that do not boost local economic activity.	New sociospatial centralities around housing and employment centers; Potential of the STAR Line and new commuting practices utilizing the EJ&E right-of-way; Privatist responses to CN purchase; Community mobilization, proactive responses around potential regeneration effects, defensive retrenchment around preserving extant suburban ways of life (The Regional Answer to Canadian National)	Green manufacturing as local economic development strategy to repurpose local skills and industrial expertise in a 'sustainable' global economy; Localized institutional partnerships to facilitate access to federal government and global capital (financial infrastructure needed to support the Green TIME Zone); 'Logistics Park Calumet'; Competition between suburbs for stake in global logistics activities, retailing, manufacturing etc.
<b>Infrastructure for suburbs</b>	Global capital and financing to support the CN purchase; Political support from State and national governments; US Departments of Transport, HUD funding for Green TIME Zone; National think tanks (CNT) and mobile policy lessons supporting the case for green manufacturing districts, TOD, COD etc.; Arguments for a national freight program	Regional support for STAR Line to foster non-radial, non-automobile suburban transit options; Financial mechanisms financing TOD, subsidizing development industry and continued sprawl, financial infrastructure supporting individual homeownership as they shape everyday spatial practice	Relational construction of Southland Chicago as suburban space structured by global economic and logistics activity; Contested politics of scale surrounding the 'right' to utilize global infrastructure 'in' suburbs for local benefit; Concrete articulation and experience of globalization, time-space compression, economic opportunity and the disciplinary logics of capitalism

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