The Times of Splintering Urbanism

The times of *Splintering Urbanism*

Jean-Paul D. Addie

Urban Studies Institute, Georgia State University, Atlanta, GA, USA

Urban Studies Institute, Georgia State University, 55 Park Place NE, 849D, Atlanta, GA, USA 30303, e: jaddie@gsu.edu

Paper prepared for *Journal of Urban Technology* special issue: 'Splintering Urbanism @ 20: Mapping Trajectories of Urban Infrastructure Research'

The times of *Splintering Urbanism*

The 20th anniversary of *Splintering Urbanism*'s publication is an apropos moment to consider the significance of time in, and for, critical infrastructure studies. This commentary brings *Splintering Urbanism* into dialogue with Lefebvre's *Rhythmanalysis* to explore how time and temporality can (re)frame, extend, and challenge how we engage and analyze the networked metropolis. As an empirical concern, conceptual framework, and methodological approach, 'infrastructure time' discloses commonalities and contradictions emerging across the infrastructure turn; enriching our understanding of the production of infrastructure space and helping us pose questions about urbanization, urban politics, and the urban condition in new and constructive ways.

Keywords: infrastructure; temporality; rhythm

The rich spatial-geographic lexicon developed in, and inspired, by *Splintering Urbanism* has profoundly shaped scholarship across the global infrastructure turn (Addie et al., 2019). Deeply informed by the book's legacy, we are keenly aware of how infrastructures' geographies establish the materiality of urbanization and mediate the lived dimensions of urban society. Infrastructures and the mobilities, resources, and power they confer (or deny), though, are inherently spatio-*temporal* problematics. Graham and Marvin clearly framed time as "a contingent phenomenon, rather than some abstract and universal social 'container' for events" (2001, p. 203) but the temporal concerns raised in *Splintering Urbanism* appear more implicitly than the spatial dynamics shaping the networked metropolis. Notions of temporality have generally been underplayed in critical infrastructure studies – partly reflecting that time's taken-for-granted banality and the sheer multiplicity of its registers make it

"extraordinarily difficult to think and talk about" (Adam, 1995, p. 5).[1] In response, this commentary embraces a call in Graham and Marvin's postscript for "urban policy and practice [to] stress the *multiple meanings of space and time*" (2001, p. 416) by considering how 'infrastructure time', as an empirical concern, conceptual framework, and methodological approach, can help us think about urbanization and everyday life in new and generative ways.

Splintering time in the networked metropolis

Urban infrastructures are fundamental technologies (both material and of power) that shape how we perceive and experience time in the city. Processes of infrastructural unbundling and urban splintering have brought forth a dynamic multiplex geography within which "time patterns [are] stretched and reconfigured beyond the rigid routines of work, commuting and home time characteristic of the classical industrial metropolis" (Graham and Marvin, 2001, p. 204). Hassan (2007) extends this idea, arguing network society has unleashed a qualitatively distinct form of 'network time' that: (1) compresses and accelerates temporality; and (2) changes mechanics and institutions of knowledge production that were previously conditioned by the abstract standard of modern 'clock time'. Network time does not negate industrial clock time. Rather, advances in ICT and the real-time flow of information reconfigure how time is signified and made real through logics of 'connected asynchronicity' that colonize other realms

[1] For exceptions, see Anand (2017), Appel et al. (2018), Besedovsky et al. (2019), Hetherington (2014), and Simone (2015).

of life and align them to postmodern imperatives of flexible accumulation (ibid, p. 51). The splintering of network time engenders highly uneven potentialities, enabling "selected functions and individuals [to] transcend time, while downgraded activities and subordinate people endure life as time goes by" (Castells, 2010, p. 497).

The abstract times of the clock and the network may oppose us as external, alienating forces drawing all facets of life towards the experience of universal, quantified temporality (Nowotny, 1994) or "eternal ephemerality" (Castells, 2010, p. 497). Yet time remains a multiplicity; something that is qualitatively understood and lived on a deeply personal level, in terms of our subjective perceptions and the political demands for 'temporal sovereignty' – time for ourselves (Nowotny, 1994, pp. 18-19). Time, in other words, is regulated and codified, but it is also *felt* (Wittman, 2016). Nowotny's (1992) influential work on 'pluritemporalism' points towards how the co-presence of multiple temporalities informs, and is informed by, diverse human experiences. However, as Adam (1995, p. 12) has argued, "the times of memory, consciousness, and anticipation are rarely discussed with reference to situations dominated by schedules and deadlines".

Splintering urbanism offers a constructive lens to connect disparate elements within social theories of time and foster multidimensional analyses of urban temporality. Embracing Graham and Marvin's interdisciplinary orientation, I suggest time/temporality may function as boundary concepts that can bring together technical-engineered, political-economic, and experiential-affective approaches to urban infrastructure, as well as scientific and everyday knowledges that have tended to be analyzed in isolation (Canales, 2016). Infrastructure links temporal scales, unfolding from the molecular mechanisms controlling circadian rhythms at the cellular level (Masri et al., 2013), through the formal and informal schedules and disruptions that

structure everyday life (Graham and McFarlane, 2015), to the epochal transformations of climate change and their attendant visions of utopian and catastrophic futurity (Hetherington, 2019). Shifting between micro, meso, and macro temporal scales (in and across geographic contexts) discloses: (1) the myriad ways in which infrastructures are constantly transforming as they erode, degrade, are devalued, updated and maintained; and (2) how networked urbanism arises through the complex layering, persistence, and erasure of different forms of infrastructure across urban landscapes. As spatial-*temporal* fixes, infrastructures are always in a state of becoming; "designed to do something, but… never 'finished'" (Smith, 2016, p. 173). Change, antiquation, and collapse are their ontological certainties (Graham, 2010).

Foregrounding infrastructure time alongside its spatiality is an important practical and conceptual task. It facilitates a multidimensional exploration of infrastructure's physical materiality and social connectivity, while offering a means to approach urban infrastructures as representations of "the desires, hope, and aspirations of a society, or its leaders" (Appel et al., 2018, p. 21). Moreover, how we conceptualize time itself also (re)shapes our understanding of infrastructural artefacts and systems. Time's plurality means it can be mobilized as history (over varying timeframes), as a calculation measuring human activity, or as a cultural lens mediating the experience of everyday life (Burgess and Elias, 2016). Indeed, Besedovsky et al. (2019, p. 581) conceive of temporalities *as* infrastructure "that underlie and powerfully shape current forms of social organization and interaction". Each framing offers a range of problematics and possibilities to explore socio-technical systems' impact on our collective urban condition.

Infrastructure's temporal rhythms

Social theories of time (as with social space) assert that temporality cannot be understood outside of the social processes and relations producing it (Adam, 1995, 2004; Lefebvre, 2004; Nowotny, 1994). Viewed as a 'timescape', the networked metropolis creates, and is lived through, complex "clusters of temporal features" (Adam, 2004, p. 143). Graham and Marvin evocatively captured this by framing the city as a heterodox "gearbox full of speeds" (2001, p. 204; citing Wark, 1998, p. 3). Socio-technical assemblages of governed, rational times and affective temporal experiences belie the possibility of uniplex urbanism and fracture the colonializing imperatives of "a public world time… [that] professes to be simultaneous" (Nowotny, 1994, p. 19).

Reading *Splintering Urbanism* alongside Lefebvre's *Rhythmanalysis* (2004) in this context creates some generative sparks that illuminate networked urbanism's heterodox temporal epistemologies. Lefebvre calls for an interdisciplinary approach to 'listening' to the city – and its infrastructure – "as an audience listens to a symphony" (ibid, p. 32). This involves reasserting time within the triad of perceived, conceived, and lived space (Lefebvre, 1991) and paying attention to how temporal abstraction shapes how we encounter urban infrastructure. In *Rhythmanalysis*, Lefebvre (2004, p. 25) sketches three modalities of 'rhythm' that are particularly useful differentiating the rationalized abstractions and embodied experiences of infrastructure time.

Repetition

Lefebvre first frames rhythm as repetition. The everyday rhythms of capitalism provide a means to colonize space-time, with repetition (through the working day etc.) establishing the bio-political basis to govern and commodify what Pred (1977) termed

"the choreography of existence". Yet absolute repetition (duplication) of movements and situations is a logical fiction. Repetition, Lefebvre asserts, does not exclude difference but exudes it through the act of repeating: a first instance differs from a second because that latter comes afterwards and exists in relation to the former (2004, p. 17). The differing repetitions enabled by infrastructures then dialectically integrate quantitative and qualitative temporalities (for individuals and social groups) through which "rhythm appears as regulated times, governed by rational laws, but in contact with what is least rational in human being: the lived, the carnal, the body" (ibid, p. 18).

Differing urban futures emerge as the repetition and performativity of social relations waxes and wanes over time (Simone, 2015). On the one hand, Anand's (2017) work on urban water points to the disciplinary governmentalities and gendered and classed subjectivities produced as governmental water time unevenly permeates Mumbai households. On the other, Shaw (2018) stresses the emancipatory potential of the 'city at night' as a repetitious but liminal space-time where transgressive activities can defy neoliberal logics. Urban splintering introduces rhythmic dissonance (movement-stasis, proceeding-waiting, acceleration-delay) that suspend or free populations in time for the practice of governance, with temporal extraction (being removed from or denied the unencumbered rhythms of urban life) serving to (re)produce conditions of social marginality (Baumann, 2019; Bissell, 2007). Such moments may be experienced differently even by the same person as lived identities are splintered in and out of place *and time* relative to hegemonic ideals (Hall, 2010; Kwan, 2013). Minimal differences in the repetition of infrastructure time serve as a foundation for realizing maximal difference, which both illuminates divergent individual and collective experiences and the possibilities of transcending entrenched inequities.

Cycle

Beyond repetition, Lefebvre (2004, p. 25) points to rhythm as "interferences of linear processes and cyclical processes". Through this lens, infrastructure time foregrounds the applied and material challenges involved in constructing and maintaining socio-technical systems. Decision-making regarding infrastructural projects, for instance, often discloses teleological horizons and (idealized) images of the future (Appel, 2018). Yet the grand visioning sweep of much urban planning is disconnected from the immediate needs of cities' inhabitants who experience infrastructure time as 'choppy, inconsistent, and unsettling' (Stamatopoulou-Robbins, 2020). The practice and perception of urban transformation thus invokes their own of 'chronopolitics' that shapes the possibilities for change in the present while setting the parameters of alternative futures (Wallis, 1970).

The cyclical aspects of infrastructure time are revealed in the city as a space of circulation, in processes of material decay and repair, and in the institutional machinations of distinct policy cycles. The procedural and practical time horizons of planners, builders, politicians, users, and opponents are assembled, clash, and splinter through cycles of environmental and impact assessments, the developmental whims of electoral campaigns, and the temporal lock-ins set by bonds and other forms of fictitious capital (Carse and Kneas, 2019; O'Brien et al., 2019). Bridging such temporal-political interests is challenging, as Elsner et al. (2019) illustrate in relation to energy transitions in Rotterdam. Bond (2019) concurs, asserting that the immediacy of the climate crisis does not readily align with the financial incentives and payback timelines of South African infrastructural mega-projects. The COVID-19 pandemic has further disclosed on-going splintering in the polyrhythmic city at the intersection of (discordant) cycles of accumulation, resource demand (from vaccines to grocery delivery), policy

design/implementation, and the lifecycles of global pathogens (Connolly et al., 2020). Linear and cyclical rhythms thus unveil the fitful, contested, and uneven ways in which infrastructure advances and recedes (Appel, 2018) and ultimately, how urban life functions at the juncture of 'project time', the lived city, and the durability of actually existing infrastructures (Koster, 2020; Ramakrishnan, O'Reilly, and Budds, 2020).

Period

Finally, Lefebvre refers to rhythms of "birth, growth, peak, then decline and end" (2004, p. 25). Such lifecycles invoke the logic of periodization as an empirical and analytical modality of infrastructure time. As a methodology, periodization utilizes multiple temporalities to order actions and events based on noteworthy conjunctures, institutional contexts, and periods' past, present, and future significance (Jessop, 2004). Periodization is a useful tool to analyze key thematic and topical concerns in critical infrastructure studies (Glass et al., 2019): from defining eras of highway planning (Rose, 1990), through charting the trajectories of post-socialist transformation (Tuvikene, Sgibnev, and Neugebauer, 2015), to projecting the futures of anthropogenic climate change (Koslov, 2019). Indeed, the overarching argument of *Splintering Urbanism* pivots on a periodization positing the rise and fall of the 'integrated ideal' of the modern networked city. However, the abstractions necessary in systematizing complex social-technical structures into distinct periods has opened the splintering urbanism thesis to critiques of collapsing geographical and temporal difference within an over-generalized schema (Coutard, 2008).

The challenges of analytical delineation and distinction do not negate periodization's utility. Rather, they emphasize the significance of contextualizing our temporal abstraction to avoid reductionist oversimplification. Because periodization is

dependent upon particular problems and units of analysis "there can be no master periodization that captures the essence of a period for all purposes" (Jessop, 2004, p. 3). Just as particular spatial scales are never simply given, periodization is informed by specific cases and analyses grounded in distinct empirical and ideological contexts (Wishart, 2004). Periodizing infrastructure time as history brings together people, artefacts, places and processes, but not everything about them. Further, the simultaneity of continuity and rupture in the flow of history leads periods to blur at the edges, overlap, and be experienced in varying ways by different social groups. Attuning ourselves to how particular periodization strategies establish their parameters for inclusion/exclusion discloses the necessary political moment within the bounding of infrastructure time. Yet the distinct methodology of periodization – in contrast to more simplified chronological approaches (Jessop, 2004) – ontologically acknowledges the networked metropolis as a complex urban palimpsest that internalizes myriad hegemonic and insurgent infrastructural temporalities.

The possibility of infrastructure time

A multitude of times permeate the city. Infrastructure time is socially constructed and therefore plural; its polyrhythms may align and conflict and are inherently political (Hope, 2009). As Graham and Marvin posited, viewing the city as multiplex space *and* multi-speed 'chronopolis' (Osman and Mulíček, 2017) is vital to understand the terrains of urban splintering. Urban infrastructures open manifold political horizons, but realizing progressive infrastructure futures "require[s] a deep understanding of existing infrastructure institutional practices and how they are embedded in the preferences and aspirations of urban residents" (Simone and Pieterse, 2017, p. 138). Bringing *Splintering Urbanism* into dialogue with Lefebvre's *Rhythmanalysis* attends to the idea

that various stakeholders perceive urban infrastructure differently because of their relative temporal vantage points. It also captures how infrastructure's socio-materiality internalizes the ideology, knowledge, and needs of particular eras, which may then rise as barriers to alternative social values and urban futures in different periods. Unpacking infrastructure time at the intersection of splintering urbanism and the polyrhythmic city, I suggest, offers a generative heuristic to examine the production, governance, and experience of urban life . And further, it establishes a conceptual and methodological agenda to identify emergent sites of innovation, empowerment, and collective (re)appropriation latent within, and beyond, the times of splintering urbanism.[2]

[2] Including those associated with indigenous and non-western conceptualizations of time, which are beyond the scope of this intervention (see Adam, 2004, pp.6-20).

References

Adam, B. (1995). *Timewatch: The social analysis of time*. Cambridge: Polity Press.

Adam, B. (2004). *Time*. Cambridge: Polity Press.

Addie, J.-P.D., Glass, M.R., and Nelles, J. (2019). Regionalizing the infrastructure turn: A research agenda. *Regional Studies, Regional Science, 7*(1), 10-26.

Anand, N. (2017). *Hydraulic city: Water and the infrastructures of citizenship in Mumbai*. Durham: Duke University Press.

Appel, H. (2018). Infrastructure time. In N. Anand, A. Gupta, and H. Appel (Eds.), *The promise of infrastructure* (pp. 41-61). Durham: Duke University Press.

Appel, H., Anand, N., and Gupta, A. (2018). Temporality, politics, and the promise of infrastructure. In N. Anand, A. Gupta, and H. Appel (Eds.), *The promise of infrastructure* (pp. 1-38). Durham: Duke University Press.

Baumann, H. (2019). Disrupting movements, synchronizing schedules. *City, 23*(4-5), 589-605.

Besedovsky, N., Grafe, F.-J., Hilbrandt, H., and Langguth, H. (2019). Time as infrastructure: For an analysis of contemporary urbanization. *City, 23*(4-5), 580-588.

Bissell, D. (2007). Animating suspension: Waiting for mobilities. *Mobilities, 2*(2), 277-298.

Bond, P. (2019). Contradictory time horizons of Durban energy piping in an era of looming climate chaos. *City, 23*(4-5), 631-645.

Burgess, J., and Elias, A. (Eds.). (2016). *Time: A vocabulary of the present*. New York: New York University Press.

Canales, J. (2016). Clock/lived. In J. Burgess and A. Elias (Eds.), *Time: A vocabulary of the present* (pp. 113-128). New York: New York University Press.

Carse, A., and Kneas, D. (2019). Unbuilt and unfinished: The temporalities of infrastructure. *Environment and Society, 10*(1), 9-28.

Castells, M. (2010). *The rise of the network society* (2nd ed.). Malden: Blackwell.

Connolly, C., Keil, R., and Ali, S.H. (2020). Extended urbanization and the spatialities of infectious disease: Demographic change, infrastructure and governance. *Urban Studies, OnlineFirst,* doi:10.1177/0042098020910873.

Coutard, O. (2008). Placing splintering urbanism: Introduction. *Geoforum, 39*(6), 1815-1820.

Elsner, I., Monstadt, J., and Raven, R. (2019). Decarbonizing Rotterdam? Energy transitions and the alignment of urban and infrastructural temporalities. *City, 23*(4-5), 646-657.

Glass, M.R., Addie, J.-P.D., and Nelles, J. (2019). Regional infrastructures, infrastructural regionalism. *Regional Studies, 53*(12), 1651-1656.

Graham, S. (Ed.) (2010). *Disrupted cities: When infrastructure fails*. New York: Routledge.

Graham, S., and Marvin, S. (2001). *Splintering urbanism: Networked infrastructures, technological mobilities and the urban condition*. New York: Routledge.

Graham, S., and McFarlane, C. (Eds.). (2015). *Infrastructural lives: Urban infrastructure in context*. New York: Routledge.

Hall, T. (2010). Urban outreach in the polyrhythmic city. In T. Edensor (Ed.), *Geographies of rhythm: Nature, place, mobilities and bodies* (pp. 59-70). Burlington: Ashgate.

Hassan, R. (2007). Network time. In R. Hassan and R.E. Purser (Eds.), *24/7: Time and temporality in the network society* (pp. 37-61). Stanford: Stanford University Press.

Hetherington, K. (2014). Waiting for the surveyor: Development promises and the temporality of infrastructure. *Journal of Latin American and Caribbean Anthropology, 19*(2), 195-211.

Hetherington, K. (Ed.) (2019). *Infrastructure, environment, and life in the Anthropocene*. Durham: Duke University Press.

Hope, W. (2009). Conflicting temporalities: State, nation, economy and democracy under global capitalism. *Time & Society, 18*(1), 62-85.

Jessop, B. (2004). "Recent societal and urban change: Principles of periodization and views in the current period", Department of Sociology, Lancaster University. Retrieved from http://www.comp.lancs.ac.uk/sociology/soc133rj.pdf

Koslov, L. (2019) How maps make time. *City, 23*(4-5), 658-672

Koster, M. (2020). An ethnographic perspective on urban planning in Brazil: Temporality, diversity and critical urban theory. *International Journal of Urban and Regional Research, 44*(2), 185-199.

Kwan, M.-P. (2013). Beyond space (as we knew it): Towards temporally integrated geographies of segregation, health, and accessibility. *Annals of the Association of American Geographers, 103*(5), 1078-1086.

Lefebvre, H. (1991). *The production of space*. Oxford: Blackwell.

Lefebvre, H. (2004). *Rhythmanalysis: Space, time and everyday life*. London: Bloomsbury.

Lieberman, E.S. (2001). Causal inferences in historical institutional analysis: A specification of periodization strategies. *Comparative Political Studies, 34*(9), 1011-1035.

Masri, S., Cervantes, M., and Sassone-Corsi, P. (2013). The circadian clock and cell cycle: Interconnected biological circuits. *Current Opinion in Cell Biology, 25*(6), 730-734.

Nowotny, H. (1992). Time and social theory: Towards a social theory of time. *Time & Society, 1*(3), 421-454.

Nowotny, H. (1994). *Time: The modern and postmodern experience*. Malden: Polity Press.

O'Brien, P., O'Neill, P., and Pike, A. (2019). Funding, financing and governing urban infrastructures. *Urban Studies, 56*(7), 1291-1303.

Osman, R., and Mulíček, O. (2017). Urban chronopolis: Ensemble of rhythmized dislocated places. *Geoforum, 85*, 46-57.

Pred, A. (1977). The choreography of existence: Comments on Hägerstrand's time-geography and its usefulness. *Economic Geography, 53*(2), 207-221.

Ramakrishnan, K., O'Reilly, K., and Budds, J. (2020). Between decay and repair: Embodied experiences of infrastructure's materiality. *Environment and Planning E: Nature and Space, Online First*, DOI:10.1177/2514848620980597.

Rose, M. H. (1990). *Interstate: Express highway politics, 1939-1989*. Knoxville: University of Tennessee Press.

Shaw, R. (2018). *The nocturnal city*. New York: Routledge.

Simone, A.M. (2015). Relational infrastructures in postcolonial urban worlds. In S. Graham and C. McFarlane (Eds.), *Infrastructural lives: Urban infrastructure in context* (pp. 17-38). New York: Routledge.

Simone, A.M., and Pieterse, E. (2017). *New urban worlds: Inhabiting dissonant times*. Cambridge: Polity Press.

Smith, M.L. (2016). Urban infrastructure as materialized consensus. *World Archaeology, 48*(1), 164-178.

Stamatopoulou-Robbins, S. C. (2020). Failure to build: Sewage and the choppy temporality of infrastructure in Palestine. *Environment and Planning E: Nature and Space, Online First*, doi:10.1177/2514848620908193.

Tuvikene, T., Sgibnev, W., and Neugebauer, C.S. (Eds.). (2015). *Post-socialist urban infrastructure*. London: Routledge.

Wallis, G.W. (1970). Chronopolitics: The impact of time perspectives on the dynamics of change. *Social Forces, 49*(1), 102-108.

Wark, S. (1998). On technological time: Virillo's overexposed city. *Arena, 83*, 1-21.

Wishart, D. (2004). Period and region. *Progress in Human Geography, 28*(3), 305-319.

Wittman, M. (2016). *Felt time*. Cambridge: MIT Press.