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Approaches to conceptualizing the digital city: a political-philosophical perspective

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Abstract. *This article reinterprets five influential approaches to the digital city - systemic, infrastructural, managerial, platform-oriented, and algorithmic - through the lens of political philosophy. It examines how datafied infrastructures and platform governance co-produce urban space and authority, reconfiguring legitimacy, consent, and opportunities for contestation. The analysis links visibility, territorial unevenness, administrative speed, and optimization to core normative concerns - reason-giving, non-domination, and equal standing.*
Keywords*: digital city; public sphere; legitimacy; infrastructures; platform governance; algorithmic regulation; accountability.*

Urban life is now mediated by tightly coupled physical and digital systems. The question is not only what technologies do but what kinds of reasons they make available to those subject to them. Classical public-sphere theory holds that democratic authority depends on institutionalized conditions for reason-giving and critique. In Habermas's historical account, the public sphere is defined "as a sphere between civil society and the state, in which critical public discussion of matters of general interest was institutionally guaranteed" (Habermas, 1989). On contemporary platforms, ranking, recommendation, and moderation routines silently shape who is visible and on what terms. Participation policies therefore have to be coupled to technical and procedural guarantees of notice, explanation, and appeal.

Seen systemically, publicness is produced by infrastructures. A city's portals, queues, and feed-like interfaces order attention and sequence claims. This observation aligns with contemporary diagnoses of the "real-time city," in which Urban environments now emit continuous data via embedded devices and networks, enabling on-the-spot analysis and altering how administrations coordinate services (Kitchin, 2014). The political-philosophical point follows: if visibility and recourse are manufactured, then legitimacy hinges on auditable procedures embedded in these systems.

An infrastructural emphasis shifts attention to networks and territory. Twenty years after Splintering Urbanism, debate about the "infrastructural turn" has made explicit that infrastructures are not a neutral backdrop but a vantage point on power and inequality. As Moss notes, Graham and Marvin's book helped move infrastructure from "the 'Cinderella of urban studies'… to a choice vantage point for studying the urban condition" (Moss, 2022, p. 127). Integration, however, can privilege "premium corridors" and neglect others. Graham and Marvin's own framing is direct: Integration of

infrastructure networks can intensify uneven access, producing premium corridors alongside neglected zones - a pattern Graham and Marvin describe as splintering urbanism (Graham & Marvin, 2001). In distributive-justice terms, service maps, outage patterns, and interoperability failures become matters of political concern, not only of engineering.

The managerial dynamics of data-driven administration introduce pressures toward speed that can narrow accountability. Kitchin's synthesis flags both the promise and the risks: alongside new analytic capacities, we confront "technocratic governance," "buggy, brittle and hackable cities" and "the panoptic city" (Kitchin, 2014, pp. 9-11). A rights-preserving response is intentionally prosaic: public, versioned registers of algorithms and datasets; change logs for models; pre-deployment and periodic human-/fundamental-rights impact assessments; independent audits and red-team exercises; and guaranteed, time-bound appeals with human review in high-risk contexts.

Platformization relocates key levers of urban sovereignty into code and contracts. When private systems allocate mobility, mediate complaint queues, or organize rentals, they perform public functions. The political claim that inhabitants should participate in shaping urban space thus extends to the rules and tools that structure urban life. In Harvey's formulation, "The right to the city is… far more than a right of individual or group access… it is a right to change and reinvent the city… a collective rather than an individual right" (Harvey, 2012, pp. 4-5). Municipal procurement and service-level agreements become constitutional instruments in miniature: they can entrench opacity or require transparency, audit rights, open interfaces, and enforceable appeals.

Context matters across geographies. Furlong's intervention cautions against projecting a Northern "modern infrastructural ideal" worldwide, arguing to place "coexistence among sociotechnical systems, as opposed to the universality of a single dominant infrastructure network, at the center of enquiry" (Furlong, 2014, p. 139). The implication for digital urbanism is that redundancy, hybridization, and safe-degradation should be treated as design norms rather than deviations. As her analysis puts it bluntly, "Infrastructure… in the South [often] has long involved multiple systems in varying degrees of coexistence" (Furlong, 2014, p. 140).

Finally, contemporary cities are also governed through prediction and optimization. Algorithmic approaches regulate by modelling futures and nudging behaviour toward predefined targets, shifting the basis of legitimacy from the publicity of ex-ante rules to performance metrics that can sidestep reason-giving (Yeung, 2018). Ethical analysis shows why safeguards are needed: algorithmic systems raise recurring issues of fairness, accountability, and contestability that must be addressed to protect affected persons (Mittelstadt, Allo, Taddeo, Wachter, & Floridi, 2016). Where platforms displace public venues for contestation, Harvey's reminder is instructive: "To claim the right to the city… is to claim some kind of shaping power over the processes of urbanization" (Harvey, 2012, p. 5). Ensuring that those subject to algorithmic decisions can demand reasons and challenge outcomes links debates about legitimacy, non-domination, and equal standing to everyday administrative routines (Yeung, 2018; Mittelstadt et al., 2016).

Taken together, these strands support a civic programme that renders rights enforceable within digital infrastructures: transparency (public, versioned registers of algorithms and datasets; layered explanations; publication of enforcement and outage statistics) (Plantin, Lagoze, Edwards, & Sandvig, 2018), inclusion (parity of offline access to essential services; accessibility by design; co-design with affected groups) (Harvey, 2012; Furlong, 2014), resilience (tested safe-degradation pathways; open formats and interoperable interfaces; public post-incident reviews) (Kitchin, 2014; Graham & Marvin, 2001; Moss, 2022), and accountability (pre-deployment and periodic impact assessments; independent audits and red-team exercises; guaranteed human-reviewed appeals in high-risk uses) (Yeung, 2018; Mittelstadt, Allo, Taddeo, Wachter, & Floridi, 2016). These are practical instruments whose value lies in their auditability and capacity for revision. They give institutional effect to a political-philosophical requirement: people governed by infrastructures and platforms should be able to understand how these systems operate, contest their effects, and participate in resetting their purposes.

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