

CHAPTER 4

Deep Time of Media Infrastructure

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When it first appeared in English usage in the mid-1920s, “infrastructure” referred to roads, tunnels, other public works, and permanent military structures. Google’s Ngram viewer, which displays the frequency with which words appear in Google’s corpora of books, shows that the term was rather obscure until around 1960—roughly the same time that “media” began to take off and “telecommunications” came into widespread use. Thus it is no coincidence that infrastructure—a word whose Latin roots, denoting any form of substructure, would seem to lend it to liberal use—is commonly associated with modern electronic communications and the trafficking of audiovisual signals.

Yet those trafficked signals long precede the age of telecommunication. And infrastructure itself has a much longer history: it has existed as long as has civilization. In fact, we could say that infrastructures made human settlement possible. I am speaking not only of roads and aqueducts and sewers, the kinds of infrastructures that archaeologists and ancient historians commonly examine. *Media* infrastructures, too, have been integrated into our cities, either by design or by accident, since the days of Eridu and Uruk. Anthropologist Clifford Geertz, urban historian Peter Hall, and archaeologist Paul Wheatley all suggest that the birth of cities is rooted just as much in the need for ceremony and communication as it is in economics, which is the prevailing theory.¹ Thus, early cities had to provide spaces conducive to pageantry and communication. Lewis Mumford, author of two grand histories of urbanity, agrees that “what

transform[ed] the passive agricultural regimes of the village into the active institutions of the city” was not merely a growth in size or population density or economy, but an extension of “the area of local intercourse, that engenders the need for combination and co-operation, communication and communion.”² That “area of local intercourse” is an infrastructure—a structure that undergirds communication and communion.

By rethinking what constitutes a media infrastructure, and by acknowledging its deep history, I hope to provide a useful counterpoint to the other studies in this volume. I want to think beyond telecommunications, beyond the nineteenth century, back beyond those technological systems administered by modern states, governmental agencies, and multinational corporations. Taking inspiration from the field of geology and the work of Siegfried Zielinski, we—media and infrastructure scholars, urban historians, even engineers and urban designers—would do well to look at the *deep time* of media infrastructure.³ And in this more expansive thinking, I want those of us in media and design studies to consider what we might learn from fields of study and practice that have long been examining infrastructure, but which have had little contact with our field. Archaeology and urban and architectural history in particular have much to offer the study of signal traffic. Of course, media studies has already witnessed the arrival of a subfield called “media archaeology,” involving such figures as Zielinski, Friedrich Kittler, Erkki Huhtamo, and Jussi Parikka—and while this work does offer an alternative, nonlinear, materialist means of writing media histories, it regards archaeology metaphorically or methodologically rather than literally. I want instead to consider insights from trowel-wielding archaeologists.

Infrastructure historian Paul Edwards admits that, today, infrastructure “has become a slippery term, often used to mean essentially any important, widely shared, human-constructed resource”; this could include hardware, organizations, “socially communicated background knowledge”—any sociotechnical systems that offer “near-ubiquitous accessibility.”⁴ Despite, or perhaps *because* of, the flexibility of the term, I think we in media and design studies have much to learn from the way Edwards and other historians and theorists of infrastructure conceive of and work with their object of study. In the next section I examine what archaeologists and urban and architectural historians can tell us about how ancient cities provided infrastructures for vocality—for public address and conversation—and for writing. And in the final section I explore how these other fields’ methods, or conceptual units, resonate with the historiographic approaches of media studies and can encourage us to reflect critically on how we construct our media—as well as our urban and architectural—histories.

My goal is to demonstrate both how thinking in terms of infrastructure can enhance existing research within media studies—particularly work on the “media city”—and how thinking in terms of the urban environment can elongate our historical view of media infrastructure and allow us to understand more broadly what constitutes a media infrastructure. What can be gained by looking back to the deep time of media infrastructure and its role in engendering and shaping our cities? First, from the perspective of media scholars, we can appreciate media as potentially embodied on a macro scale, as a force whose modes and ideologies and aesthetics of operation can be spatialized, and materialized, in the landscape. We can read the archaeological record, conduct forensic analyses—or, when we are dealing with a medium like the voice, for which there is no collectable artifact, we can use techniques from archaeoacoustics to “listen” to spaces past. We can dig up the cables, pull out the wires, trace the epigraphy on building facades, analyze the disks—and then observe their layering and interconnection.

And when examining media at the macro scale, we also have to acknowledge that media’s history is entwined with that of our cities, their streets and buildings, their political-economic and social networks, and so on. In the process, we come to realize that those cities carry in them the “residue” of all media technologies past—and that, furthermore, these “past” media are not merely artifacts or ruins. Much like Raymond Williams’s category of the “residual,” they are “formed in the past, but . . . still active in the cultural process, not only and often not at all as an element of the past, but as an effective element of the present.”⁵ This is why our cities today are not solely virtual but are simultaneously aural, graphic, textual, sonic, visual, and digital. We tend in media studies to write format-specific histories, and to suggest that new technologies supplant the old—but when we look at our media histories through our cities, we observe a layering, or resounding, of media epochs. Such realizations open up new methodological opportunities for studying media.

Second, work on infrastructure has the potential to contribute to urban and architectural history, too. For instance, it is possible to reevaluate theories about the birth of cities, which tend to privilege economic explanations for urbanization, and reinforce the central role played by media and communication in urban history. Furthermore, we can highlight the role of communication in giving *form* to our cities. Prevailing theories suggest that urban form is shaped primarily by topography, transportation, defense, or even cosmological or philosophical views. Yet various means of communication—whether the voice or print or digital technologies—have also shaped cities throughout history.

Deep Time of the Media City

There is a well-established but ever growing area of study within media studies that seems to lend itself to the interdisciplinary study I am proposing here. Scholars focusing on the “media city” have tapped into insights from architectural and urban history and theory in order to think about media in relation to “the urban,” yet they have tended to focus their attention on *modern* media—photography, film, television, and the like. There is a plethora of research on architecture and cities in relation to mechanically reproduced still and moving images. For instance, many photographic, architectural, and cultural historians, inspired greatly by Walter Benjamin, have examined the city as a photographic subject, photography’s early role in the documentation of urban transformation and as an instigator of social change, and photography’s influence on particular modern architectural and urban designers.⁶ There is also a tremendous amount of work on the city and film as contemporaneous developments, the representation of the city *in* film (this is the dominant thread by far), and film’s influence upon architects and planners, including some investigations of the city as a physical and social infrastructure for the rise of film.⁷ In more recent decades, scholars like Lynn Spigel and Anna McCarthy have begun to address the synchronous rise of television and postwar suburbs, the politics of screens in public places, and the impact of networked digital media on urban design and urban experience.⁸ There has also been excellent work on the impact of radio and modern sound technologies on architecture, zoning, and urban experience.⁹

Some media-cities research evinces an assumption that the mediation of the city *began* with modern media. Scott McQuire, in *The Media City*, observes that the mediation of urban experience “has been underway at least since the development of technological images in the context of urban ‘modernization’ in the mid-nineteenth century.”¹⁰ Eric Gordon, in *The Urban Spectator*, locates the origin of the media city even later than does McQuire: “from the hand-held camera at the end of the nineteenth century to the mobile phone at the end of the twentieth, the city has always been a mediated construct.”¹¹ I contend that “always” begins well before the late nineteenth century and the era of telecommunications.

Cities have, of course, been *represented* for millennia in maps, paintings, woodcuts, lyric poems, and other media formats. Yet the city as a “mediated construct” certainly encompasses much more than mere portrayals of the city; media technologies—particularly media infrastructures—have been embedded in and informing the morphological evolution of our cities since their coming into being. The “media cities” research very rarely looks at infrastructure.

history—and recent efforts to consider the “geology” of media: the natural resources used to make our media hardware. See Jussi Parikka, “Deep Times and Geology of Media,” *Machinology*, August 20, 2013, available at <http://jussiparikka.net/2013/08/20/deep-times-and-geology-of-media> (accessed September 20, 2014). These latter efforts are particularly relevant to our efforts to dig into deep history, given that the very concept of deep time emerged in geology.

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5. Raymond Williams, *Marxism and Literature* (New York: Oxford University Press, 1977), 122.

6. James Ackerman, *Origins, Imitations, Conventions: Representation in the Visual Arts* (Cambridge, Mass.: MIT Press, 2002); Beatriz Colomina, *Privacy and Publicity: Architecture as Mass Media* (Cambridge, Mass.: MIT Press, 1994); Peter Bacon Hales, *Silver Cities: Photographing American Urbanization, 1839–1915* (Philadelphia: Temple University Press, 1983); Levine, Neil. “‘The Significance of Facts’: Mies’s Collages Up Close and Personal,” *Assemblage* 37 (December 1998): 70–101; Richard Pare, *Photography and Architecture: 1839–1939* (Montreal: Canadian Center for Architecture, 1982); Shelley Rice, *Parisian Views* (Cambridge, Mass.: MIT Press, 1999).

7. Walter Benjamin, *Illuminations*, trans. Harry Zohn (New York: Schocken, 1969); David B. Clarke, ed. *The Cinematic City* (New York: Routledge, 1997); Colomina, *Privacy and Publicity*; Edward Dimendberg, *Film Noir and the Spaces of Modernity* (Cambridge, Mass.: Harvard University Press, 2004); Sergei Eisenstein, “Montage and Architecture,” trans. Michael Glenny, *Assemblage* 10 (1938/1989): 111–31; Scott McQuire, *The Media City: Media, Architecture and Urban Space* (Thousand Oaks, Calif.: Sage, 2008).

8. David Heckman, *Small World: Smart Houses and the Dream of the Perfect Day* (Durham, N.C.: Duke University Press, 2008); Anna McCarthy, *Ambient Television: Visual Culture and Public Space* (Durham, N.C.: Duke University Press, 2001); Scott McQuire, Meredith Martin, and Sabine Niederer, eds, *Urban Screens Reader*, Institute of Network Cultures Reader, vol. 5 (Amsterdam: Institute of Network Cultures and Creative Commons, 2009); Lynn Spigel, *Make Room for TV: Television and the Family Ideal in Postwar America* (Chicago: University of Chicago Press, 1992).

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10. McQuire, *Media City*, vii.

11. Eric Gordon, *The Urban Spectator: American Concept-Cities from Kodak to Google* (Hanover, N.H.: Dartmouth College Press, 2010), 2.

12. Mario Carpo, *Architecture in the Age of Printing: Orality, Writing, Typography, and Printed Images in the History of Architectural Theory* (Cambridge, Mass.: MIT Press, 2001). See also Diane Favro, "Meaning and Experience: Urban History from Antiquity to the Early Modern Period," *Journal of the Society of Architectural Historians* 58, no. 3 (1999): 364–73; Rose Marie San Juan, *Rome: A City Out of Print* (Minneapolis: University of Minnesota Press, 2001); Bronwen Wilson, *The World in Venice: Print, the City, and Early Modern Identity* (Toronto: University of Toronto Press, 2005).

13. See also Shannon Mattern, "Paju Bookcity: The Next Chapter" *Places*, January 14, 2013, available at <https://placesjournal.org/article/paju-bookcity-the-next-chapter> (accessed September 20, 2014); and "Interfacing Urban Intelligence" *Places*, April 28, 2014, available at <https://placesjournal.org/article/interfacing-urban-intelligence> (accessed September 20, 2014).

14. Shannon Mattern, "Ear to the Wire: Listening to Historic Urban Infrastructures" *Amodern* 2 (Fall 2013), available at <http://amodern.net/article/ear-to-the-wire> (accessed September 20, 2014).

15. Quintilian, *Institutio Oratoria* (ca. 95 CE), 2.16.9, available at <http://perseus.uchicago.edu/perseus-cgi/citequery3.pl?dbname=LatinAugust2012&getid=1&query=Quint.%202.16.15> (accessed September 20, 2014); See also Indra Kagis McEwen, "Hadrian's Rhetoric I: The Parthenon," *RES: Anthropology and Aesthetics* 24 (1993): 55–66.

16. Aristotle, "Politics," in *Complete Works of Aristotle*, Revised Oxford Translation, ed. Jonathan Barnes (Princeton, N.J.: Princeton University Press, 1998), 1326b5–7; Vitruvius, *The Ten Books on Architecture* (Cambridge, Mass.: Harvard University Press, 1914), 139.

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19. David Henkin, *City Reading: Written Words and Public Spaces in Antebellum New York* (New York: Columbia University Press, 1998).

20. Joanna Merwood-Salisbury, "Patriotism and Protest: Union Square as Public Space, 1832–1932," *Journal of the Society of Architectural Historians* 68, no. 4 (2009): 543.

21. *Ibid.*, 551.

22. Christopher Johanson, interview with the author, February 26, 2013.

23. Louise Revell, *Roman Imperialism and Local Identities* (New York: Cambridge University Press, 2009), 3–4.

24. Irene A. Bierman, *Writing Signs: The Fatimid Public Text* (Los Angeles: University of California Press, 1998), 20.

25. Robert E. Harrist Jr., *The Landscape of Words: Stone Inscriptions from Early and Medieval China* (Seattle: University of Washington Press, 2008), 23.

26. Harold Innis, *The Bias of Communication* (Toronto: University of Toronto Press, 1951).
27. Brinkley Messick, *The Calligraphic State: Textual Domination and History in a Muslim Society* (Berkeley: University of California Press, 1993); Mumford, *Culture of Cities*.
28. Messick, *Calligraphic State*, 231.
29. *Ibid.*, 246–7.
30. See London School of Economics, *Electric City* (London: LSE, December 2012), available at <http://lsecities.net/publications/conference-newspapers/the-electric-city>, which includes work by several key “smart city” critics, including Orit Halpern, Dan Hill, Saskia Sassen, and Richard Sennett. See also *Volume 34* “City in a Box” Special Issue (December 2012); Adam Greenfield’s *The City is Here for You to Use* series of e-books; and Shannon Mattern, “Methodolatry and the Art of Measure” *Places* (November 5, 2014), available at <https://placesjournal.org/article/methodolatry-and-the-art-of-measure> (accessed September 20, 2014).
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32. Henri Lefebvre, *The Production of Space*, trans. Donald Nicholson-Smith (1974; Oxford: Blackwell, 1991).
33. Larkin, *Signal and Noise*, 5.
34. Mattern, *Ear to the Wire*, 2013.
35. Stephen Graham and Simon Marvin, *Telecommunications and the City: Electronic Spaces, Urban Places* (New York: Routledge, 1996), 329.
36. Christopher L. Witmore, “Vision, Media, Noise, and the Percolation of Time: Symmetrical Approaches to the Mediation of the Material World,” *Journal of Material Culture* 11, no. 3 (2006): 279.
37. Stephen Graham and Simon Marvin, *Splintering Urbanism: Networked Infrastructures, Technological Mobilities and the Urban Condition* (New York: Routledge, 2001), 8.
38. Richard R. John, “Recasting the Information Infrastructure for the Industrial Age,” in *A Nation Transformed: How Information Has Shaped the United States from Colonial Times to the Present*, ed. Alfred D. Chandler and James W. Cortada (New York: Oxford University Press, 2000), 56.
39. Edwards et al., “Understanding Infrastructure,” i–ii.
40. *Ibid.*, 6–7.
41. See Ronald E. Day, *The Modern Invention of Information: Discourse, History, and Power* (Carbondale: Southern Illinois University Press, 2001); James Gleick, *The Information: A History, a Theory, a Flood* (New York: Vintage, 2012); University of California, San Diego Global Information Industry Center’s “History of Information,” available at <http://giic.ucsd.edu/historyofinfo.php>; or the syllabus for Shannon Mattern, “Archives, Libraries and Databases,” graduate seminar, available at <http://www.wordsinspace.net/lib-arch-data/2014-fall>.
42. Geoffrey Winthrop-Young, *Kittler and the Media* (Malden, Mass.: Polity, 2011), 121.

43. Kazys Varnelis, "Centripetal City," *Cabinet* 17 (Spring 2005): 27–28.

44. Gregory Downey, *Telegraph Messenger Boys: Labor, Technology, and Geography, 1850–1950* (New York: Routledge, 2002). See also Gregory Downey, "Making Media Work: Time, Space, Identity, and Labor in the Analysis of Information and Communication Infrastructure," in *Media Technologies: Essays on Communication, Materiality and Society*, ed. Tarleton Gillespie, Pablo J. Boczkowski, and Kirsten A. Foot (Cambridge, Mass.: MIT Press, 2014), 141–65.

45. AbdouMaliq Simone, "People as Infrastructure: Intersecting Fragments in Johannesburg," *Public Culture* 16 (September 2004): 425.

46. *Ibid.*, 407.

47. See Adrian Johns, *Piracy: The Intellectual Property Wars from Gutenberg to Gates* (Chicago: University of Chicago Press, 2010); Jennifer A. Baird and Claire Taylor, *Ancient Graffiti in Context* (New York: Routledge, 2011); Hillel Schwartz, *Making Noise: From Babel to the Big Bang and Beyond* (Brooklyn: Zone, 2011).

48. Graham and Marvin, *Splintering Urbanism*, 411.

49. Edwards, "Infrastructure and Modernity," 186.

50. *Ibid.*, 204.

51. *Ibid.*, 207.