

Margot Lystra  
Ph.D. Candidate  
History of Architecture and Urban Development  
Cornell University

### Envisioning Environments: Designs for Urban US Freeways, 1956-1968

Practitioners and scholars in architecture, urbanism, and related fields often refer to the “urban environment” when calling attention to myriad ecological, climatological, and social dynamics of cities. Rarely, however, is the concept itself interrogated. How did US cities become understood as living “environments”? And what were designers’ roles in this conceptualization: specifically, how did they *envision* cities as environmental entities? Recent scholarship in art and architectural history has highlighted ecological and biocentrist aspects of twentieth century design, and discourses on craft and architectural drawing have articulated the performative power of drawing and making practices.<sup>1</sup> Thus far, however, historians have not often investigated specific interconnections between urbanism, ecological design, and technique and method; as a result, the underpinnings of contemporary design approaches such as landscape urbanism and ecological urbanism remain under-interrogated.

This dissertation brings together architectural history and theory with Science and Technology Studies (STS) and urban environmental history to investigate these interconnections. Analyzing several US freeway designs that occurred amidst the urban freeway revolts of the 1960s, I unearth how these projects’ experimental techniques and methods redefined cities and urban regions on newly ecological terms. I chart the 1960s evolution of urban environmental activism, elucidate late modernist designers’ sensorial approaches to infrastructures, and scrutinize the political advantages and cultural complications of defining urban landscapes through data based quantification. The outcome is a uniquely praxiographic contribution to an emerging transdisciplinary discourse regarding how

landscapes, technologies, ways of seeing, and design professions evolved together in the nineteenth and twentieth centuries.<sup>2</sup>

From the postwar years through the 1960s, US freeway plans catalyzed a public reckoning regarding the natures of cities. Government officials, urban dwellers, and designers and planners across the United States debated these infrastructures' placement, wrangling over the values of threatened sites and neighborhoods. Through these debates, prior conceptions of urban environments expanded to encompass the dynamic, living, and inter-relational dimensions of cities. This transformation took place in part via public discourse. It also occurred through innovative design approaches, as several US architects, landscape architects, and urban designers engaged freeway designs as opportunities for technical and methodological experimentation. Mixing earlier generations' parkway visions and concerns for spatial experience with emergent cybernetic themes, data-driven analysis, scientific references, and anticipations of computerization, these explorative designs modeled natural forces in new ways, and at new scales.

The dissertation analyzes experimental 1960s design approaches used by Lawrence Halprin, Kevin Lynch, Christopher Alexander, Donald Appleyard, Ian McHarg, and others as they sought to demonstrate the ecological effects of highway infrastructures. Chapters one and two establish the basis of later design experiments: describing the historical context for 1950s-60s freeway designs, and recounting how Halprin's involvement in the San Francisco freeway revolt – one of the first such protests in the United States – contributed to a new urban environmentalism. Chapter three examines how methods proposed in Appleyard, Lynch, and John Myer's *The View From the Road* (1964) mixed novel uses of data with techniques that were markedly situated and embodied, thus engaging the urban environment as both systematically quantifiable and close at hand. Chapters four and five demonstrate how the increasingly standardized design approaches of later 1960s freeway analyses projected

objectivity in ways that proved highly persuasive in governmental contexts. Throughout, I draw on STS-based frameworks for analyzing skilled practices to show how conceptualizations of the urban environment shifted with changes in drawing implements, uses of eyes and hands, inclusion and exclusion of site data, and designers' own understandings of their roles relative to living forces.<sup>3</sup> The result is a fine-grained account of how urban infrastructures, environmental ideas, and design practices evolved together from the mid 1950s through the late 1960s.

This work makes designers' roles in environmental movements more accessible to a broad range of scholars. It forges new ground at the intersection of discourses on ecological design, architectural drawing and making, urban environmental history, and STS. It contributes to an emergent transdisciplinary discourse regarding the techniques and methods through which designers visualized environmental dynamics at urban and regional scales. Above all, it articulates what is at stake – socially, politically, and environmentally – in how designers engage the many skilled actions of designing.

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<sup>1</sup> Peder Anker (*From Bauhaus to Eco-house*, 2010) and Olivier Botar and Isabel Wünsche (*Biocentrism and Modernism*, 2011) have identified environmental currents in early modernist designers' affiliations and attitudes. In addition to Robin Evans' seminal writings on drawing, works by Stan Allen (*Practice: Architecture, Technique and Representation*, 2000), James Corner ("Representation and Landscape: Drawing and Making in the Landscape Medium," 1992), Paul Emmons ("Size Matters: Virtual Scale and Bodily Imagination in Architectural Drawing," 2005) and Glenn Adamson (*Thinking Through Craft*, 2007) have highlighted how drawing and making practices enact ethics and ideologies in art and design.

<sup>2</sup> See, for example, Matthew Gandy's *Concrete and Clay* (2002), Michelle Murphy's *Sick Building Syndrome and the Problem of Uncertainty* (2006), Thomas Zeller's *Driving Germany* (2007), Jeanne Haffner's *The View from Above* (2013), and Sonja Duempelmann's *Flights of Imagination* (2014).

<sup>3</sup> STS scholars have been integrating discussions of "natureculture" with analyses of skilled practices for some time. I draw specifically on works that analyze how skilled practices co-construct human and non-human roles and agencies, such as Bruno Latour's "Drawing Things Together" (1990), Annemarie Mol's *The Body Multiple: Ontology in Medical Practice* (2002), Donna Haraway's *A Companion Species Manifesto* (2003), and Andrew Pickering's "The Politics of Theory" (2009).