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Author(s): Andrew Shanken

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Alexander, "A City Is Not a Tree," *Design* (February 1966), 49. Image courtesy of Christopher Alexander.

## THE TREE IN THE SYSTEM: SHIFTING URBAN PARADIGMS IN MID-CENTURY LONDON

### Andrew Shanken

A tone of reprimand pervades Christopher Alexander's essay "A City Is Not a Tree" (1965). He chides modernist planning for its jejune methods. Mid-century urban plans sprout up as reductive linear "trees", while his "semi-lattice" spreads into complex, multi-nodal arrays that represent dynamic urban systems.<sup>(F1g.1)</sup> It is a decisive turn away from organicism to the system as the dominant metaphor for urban planning, marking a sea change in urban planning itself. Where the earlier metaphor takes nature as a primal force with which the architect-planner would conspire sensitively, the system is a tool invented and manipulated by the planner to control the world directly. The system, however, veils its metaphor behind mathematical rationality, presenting a false sense of agency. Systems planners at their most utopian hoped to create a feedback loop between cities and people, an application of Norbert Wiener's "human use of human beings" to urban planning.<sup>1</sup> A cybernetic city replaced a natural one.

Both metaphors show that urban plans are arguments that advance hypothetical worlds distinct from the present. As such, they tend to be rhetorically dense. Even when they appear reportorial or dispassionately statistical, they are still metaphorical, in the sense that they find "equivalences in the most disparate phenomena" and substitute some of the meaning from one thing to another.<sup>2</sup> They may be rhetorical or visual. As Ernst Gombrich argued about painting, "visual representation may have its roots in such 'transference' of attitudes from objects of desire to suitable substitutes."<sup>3</sup> Moving beyond Gombrich, metaphors lurk in diagrams, charts, and data sets, not just in words and images. The transformative and often violent urban planning ideologies of the twentieth century necessitated a thicket of metaphorical substitution.

One such thicket can be found in the 1943 London County Council (LCC) Plan of London, the paradigmatic statement of organic planning of its time. (Fig.2) Leading architects, planners, and critics celebrated the plan and reveled in its organic imagery—until 1965, when Alexander dismissed it as a tree, its coup de grâce. Its rise and fall reveals how paradigms are rhetorical, rather than pure shifts in knowledge and method. It also reveals the metaphorical basis of agency, understood discursively as an argument for the authority of a method or worldview.



Fig.2 Arthur Ling and D. K. Johnson, Social and Functional Analysis, from Forshaw and Abercrombie, County of London Plan, 1943, facing page 21. Image courtesy City of London, London Metropolitan Archives

144

- Norbert Wiener, The Human Use of Human Beings 1 (Boston: Houghton Mifflin, 1950).
- Ernst Gombrich, Meditations on a Hobby Horse 2 (London: Phaidon Press, 1963): 14.
- 3 Ibid.
- 4
- George Lakoff and Mark Johnson, Metaphors We Live By (Chicago: University of Chicago Press, 1980), 6.
- James Boyd White, When Words Lose Their Meaning 5 (Chicago: University of Chicago Press, 1984), 4.

To focus on metaphors and their visual companions emphasizes the hypothetical work of planners, while inquiring into a neglected force in how paradigms form. What makes metaphorical transference powerful is its ability to call forth a conceptual system that buttresses an argument. As George Lakoff and Mark Johnson asserted, "Metaphors as linguistic expressions are possible precisely because they are metaphors in a person's conceptual system."<sup>4</sup> Through words and images, they provide a model for viewing things, including architecture and cities.

It follows that changes in language cause fundamental shifts in conceptual systems. "An alteration in language," as James Boyd White has written,

is not merely a lexical event.... It is a change in the world and the self, in manner and conduct and sentiment. Changes of this kind are complex and reciprocal in nature...for at every stage the change is effected, knowingly or not, by the action of individual people, who at once form and are formed by their language and the events of their world. When language changes meaning, the world changes meaning, and we are part of the world.5

Put simply, words and images do more than describe: they create meaning. When language (verbal or visual) is in flux, so is culture. In this way, a metaphorical shift is a form of acting upon the world. This essay shows this process at work in mid-20th-century planning.

#### ANDREW SHANKEN

#### ORGANIC PLANNING

Amoebic shapes flow through a soup of colorful washes.<sup>(Fig.2)</sup> The black snake of the Thames wends its way through an improvisation on the bubble diagrams common in population studies. Urban planning as biomorphic surrealism! The "Social and Technical Analysis" was the most cited image in the *County of London Plan* of 1943 by the London County Council (LCC), a major event in planning history.<sup>6</sup> Neither map, nor plan, but rather a diagram inscribed over a map, dazzled American architects. The abstraction became a common reference during the war. As a metaphor, it transferred comprehensive planning—increasingly vulnerable with the rise of Soviet and Nazi planning—into a "natural" process.

F.W. Forshaw and Patrick Abercrombie, architect and planner, respectively, set the rhetorical tone of the plan. "A patient analysis," they wrote, "...discovers a living and organic structure, still persisting in spite of overgrowth and decay. It consists of a collection of units or communities, fused together; though their boundaries may have been lost, their centers are often clearly marked, having descended from ancient villages." These areas, long absorbed by synoecism, were not just physically intact, the authors claimed, they also displayed a sense of local loyalty. The plan proposed to "disengage these communities" and "to mark more clearly their identities," in essence replacing London's sprawl with a coherent body of cells.<sup>7</sup>

Countering Le Corbusier's surgical metaphor, they wrote: "The process is organic...and may be likened to the grafting of a new, vigorous growth upon the old stock of London."<sup>8</sup> This entailed a fifty-year plan for separating pedestrians from traffic, coordinating work and residential life geographically, lowering the population density and growing a green belt around the city. Simultaneously, the report called for radical decentralization, recommending the displacement of 500,000 people from the city to its periphery. None of this, of course, could be construed as organic. Metaphors bridged the chasm to reality.

The "Social and Functional Analysis" did some of this work. In title, it proclaims to be a rational tool of analysis, but visually it plays metaphorical games that draw attention away from analysis. What a contrast, for instance, to the thunderstruck streets of London, pocked with bomb blasts and choking on rubble; or to pre-war London, described as a "disfigured" place where there "is not center, no articulate plan, no definite edge; congested squalor thins out into sporadic squalor, and that into grimy unkemptness."9 The organic image made the squalid, crumbled capital a singularity again. It created a second London, an imaginary city anchored in the geographical certainties of maps, but enough liberated from the technical datum to indulge in hypothetical play. It posited what the city could be and raised the possibility of action in an unlikely moment. The image thus smoothed over much of the larger plan's contentiousness. A romantic appeal to natural communities veiled the state as the primary agent of eminent domain and land use planning. A supra-historical model-nature-takes its place, one discoverable through rational analysis. Reversing the terms makes its implication clear: to argue with the plan was to argue against nature.

#### AMERICAN RECEPTION

The Social and Functional Analysis was first reproduced in the United States in *Architectural Forum* in April 1944. In "An Organic Theory of City Planning," Constantin Pertzoff and Hermann and Erna M. J. Herrey used it as the sole example of an organic city plan.<sup>10</sup> They called

- 6 J. H. Forshaw and Patrick Abercrombie, *County of London Plan* (London: Macmillan and Company, 1943).
- 7 Forshaw and Abercrombie, 2.
- 8 Forshaw and Abercrombie, 3.
- Clough Williams-Ellis, *England and the Octopus* [1928] (Great Britain: Robert MacLehose and Company Limited, 1975), 18, 26.
- Hermann Herrey, Constantin Pertzoff, and Erna M. J. Herrey, "An Organic Theory of City Planning," *Architectural Forum* 80, 4 (April, 1944), 133-140.

145

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11 Herrey, et. al., 133.

12 Guy Greer, "After the Plans, What?" Fortune 30 (July, 1944) 169-172+. for "breaking up the city into social units" of a human scale, ones in which "the urban community is a living organism, not just a large accumulation of people."<sup>11</sup> Every unit was to be easily accessible to the center by foot and would provide a social space for its inhabitants. In their schematic drawing, laid out next to the LCC diagram, figures enveloped in overlapping bubbles represent the social units.<sup>(Fig.3)</sup>

Below both images, the authors drew comparisons to New York City and Peter Brueghel's "Battle Between Carnival and Lent" (1559), condemning the destruction of social space in the former while appealing to the medieval town square in the latter as a model for communal space. In other words, they sought a metropolis of many Brueghel's strung together as neighborhood units: in essence, the LCC's plan for London reinterpreted through Brueghel for American cities. A substitution had been made: through formal affinities with the Brueghel, the pre-modern urban nuclei latent in London's fabric had been drawn to the surface, but transformed into a modern diagram. A nostalgic vision of the human relationships of the medieval town had been transferred to the 20<sup>th</sup>-century city.

Shortly after the *Forum* article, in July 1944, Guy Greer, an American economist and champion of urban planning, used the LCC plan in an article for *Fortune*.<sup>12</sup> Greer was an administrator at the Federal Reserve during the war and a disciple of Harvard economist Alvin Hansen, whose connections to John Maynard Keynes and William Beveridge were among



ANDREW SHANKEN

Fig.3 Diagram of shifting social patterns compared to the Social and Functional Analysis, Hermann Herrey, Constantin Pertzoff, and Erna M. J. Herrey, "An Organic Theory of City Planning," Architectural Forum 80, 4 (April, 1944), 134.

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Fig. 4 Comparison of a botanical drawing by Ernst Haeckel with a neighborhood unit by Clarence Stein, from Walter Gropius, *Rebuilding Our Communities* (Chicago: Paul Theobald, 1945), 19.

- 13 See Andrew M. Shanken, 194X: Architecture, Planning, and Consumer Culture on the American Home Front (Minneapolis: University of Minnesota Press, 2009): 30-39.
- 14 Guy Greer and Alvin Harvey Hansen, Urban Redevelopment and Housing. Planning Pamphlets No. 10 (Washington: National Planning Association, 1941).
- 15 Guy Greer, ed., The Problem of the Cities and Towns. Report of the Conference on Urbanism, Harvard
- University, march 5-6, 1942 (Cambridge, Mass., 1942).
  Walter Gropius, Rebuilding Our Communities (Chicago Paul Theobald, 1945), 19. Also, Shanken, 37-39.
- 17 Gropius, 19.
- 18 Gropius, 15.
- 19 Gropius, 16.

the most important channels of Anglo-American dialogue about economic and national planning.<sup>13</sup> Together the two Americans wrote the Hansen-Greer plan in 1941, a radical argument for the public ownership of urban land that called for "square-mile" urban reconstruction.<sup>14</sup> In 1942, Greer and Hansen, along with Walter Gropius, organized a wartime conference on urbanism at Harvard.<sup>15</sup> Soon thereafter, Greer joined the editorial staff of *Fortune*, where he introduced the business elite to radical planning ideas. In one article, Greer included an unpublished version of the socalled "Social and Functional Analysis" as a model for post-war American cities. The imagery and ideology of New Deal and British planning thus infiltrated a magazine devoted to business and laissez-faire economics.

In 1945, Walter Gropius reproduced the "Social and Functional Analysis" in *Rebuilding Our Communities*, a tract on post-war planning in America that grew out of a lecture he gave in February of that year at the Institute of Design in Chicago.<sup>16</sup> He juxtaposed the Brueghel, borrowed from Pertzoff and the Herreys, with a neighborhood unit by Clarence Stein whose tendrils of highway and neighborhood clusters resemble the stem, pistils, and petals of the botanical drawing by the German biologist Ernst Haeckel on the same page. These he labeled (in case the comparison was not clear), "Organic group life in nature; conglomerations of tightly or loosely knit units."<sup>17</sup> (Fig.4) The analogical gave way to the literal.

Gropius's comparisons illustrated a crude Marxist, socio-biological argument. The machine had reduced the human being to an "industrial tool," as "greed has interfered with the biological cycle of human companionship which keeps the life of the city healthy."<sup>18</sup> The way out of this "grim fight between capital and labor," which had reduced cities to "a bewildering chaos of...stunts [and] a disorderly riot of styles," was to "humanize the impact of the machine" by making the "pattern and scale of future communities…human again."<sup>19</sup> The images provided the visual argument for his organic "cure." Urban planning would restore lost social equilibrium and stave off unnatural disasters such as war, which resulted from modern alienation. Gropius saw in the organic a means for fragmented modernity to restore order.



Fig.5 Chandigarh, Brasilia, and Communitas as trees, Christopher Alexander, "A City Is Not a Tree," *Design* (February 1966), 50. Image courtesy of Christopher Alexander.

#### THE CITY IS NOT A TREE

Sigfried Giedion reproduced the LCC plan in A Decade of New Architecture in 1951, but by 1965 Christopher Alexander turned decisively against the plan in "A City Is Not a Tree." Framing urban conditions in terms of the mathematical concept of the set ("collections of material elements such as people, ...cars, bricks, molecules, houses...etc."), he explained how these elements "form a system" when they work together.<sup>20</sup> "A collection of sets forms a tree," he wrote, "if, and only if, for any two sets that belong to the collection, either one is wholly contained in the other, or else they are wholly disjoint."<sup>21</sup> The LCC map was a tree, he argued, because the amoebic bubbles are entirely discrete. (See bottom, Figure 1) On the other hand, his "semi-lattice axiom" held that "A collection of sets forms a semilattice if and only if, when two overlapping sets belong to the collection, then the set of elements common to both also belongs to the collection."22 The tree, he wrote, as "a trivially simple semi-lattice" failed to recognize the true complexity and subtlety of urban relationships. "A tree based on twenty elements," Alexander calculated, "can contain at most nineteen further subsets of the twenty, while a semilattice based on the same twenty elements can contain more than one million different subsets."23

Below each of his examples of arboreal cities, diagrams reduce the most vivid images of twentieth-century urban planning to stick figures. (Fig.5) The amoebas of the LCC plan, for instance, are bled of their color and compressed into a fan of lines, none communicating with any other, before they culminate at a single point that represents the LCC plan as a closed system. (The map itself was published upside down—evidence of his disregard.) His diagrams strip away the persuasive power of the plans, leaving them nakedly linear in order to reveal the simple tree he wished to see behind them. His diagrams reduced Paolo Soleri's Mesa City, Kenzo Tange's plan for Tokyo Bay, Le Corbusier's Chandigarh, Lucio Costa's Brasilia, and others to limp and leafless trees. By contrast, the semi-lattice represented a city "with virtually no closed groups of people."<sup>24</sup> Another substitution had been made.(Fig.6) A paradigm was dead.

Putting aside any dispute one might have with the semi-lattice or systems planning, how had Alexander come to this paradigm shifting method? In his early publications, he worked out a diagrammatical language for parsing architectural conditions in an attempt to create a rational and universal method of analysis and design.<sup>25</sup> With the realization that his diagrams were just as arbitrary as modernist plans, he wrote "A City Is Not a Tree" in order to describe the complexity of urban life, which was "thick with overlap" and accident.<sup>26</sup> The semi-lattice, as a concept and as imagery, could have come from Pertzoff and the Herreys (the latter two, like Alexander, had backgrounds in physics, and Hermann Herrey, like Alexander, hailed from Vienna), who wrote about shifting patterns, urban fluidity, and overlap, and whose diagrams describe urban complexity in much the same way.<sup>(Fig.7)</sup> Alexander's attack on modernism was a palace coup.<sup>27</sup>

Given Alexander's bravado, the nature of this influence becomes interesting. Was he put off by the metaphorical world of modern planning? More impressionistic than precise, the organic city fit uneasily with the postwar temper, when planning looked to the social and hard sciences for its methods and its metaphors. By contrast, the semi-lattice attempted to dispel metaphorical play itself. After all, mathematics is empirical and literal. It describes the world itself, eschewing symbolic content. The semi-lattice cut through this fuzziness, asserting a different form of

#### ANDREW SHANKEN

148



Fig.6 Semi-lattice, Christopher Alexander, "A City Is Not a Tree," *Design* (February 1966), 51 Image courtesy of Christopher Alexander.

- 20 Christopher Alexander, "A City Is Not a Tree," Design (February 1966), 48; originally published in slightly different form in: *Architectural Forum* (April 1965), 58-62 and (May 1965): 58-61. All quotations and images are from the latter publication.
- 21 Alexander, 49.
- 22 Alexander, 49.
- 23 Alexander, 49.
- 24 Alexander, 51.
- 25 Alexander and Serge Chermayeff, *Community and Privacy* (Garden City, N.Y.: Doubleday, 1963).
- Alexander, 51. The biographical sketch leans on Joan Ockman, ed., *Architecture Culture* 1943-1968 (New York: Rizzoli International Publications, Inc., 1993): 379.
   Herrey, et. al., 135.
- 28 See Waverly Lowell, Elizabeth Byrne, and Betsy Frederick-Rothwell, eds., Design on the Edge: A Century of Teaching Architecture at the University of California, Berkeley, 1903-2003 (Berkeley: College of Environmental Design, 2009): 163-184. Also, Avigail Sachs, Researching for Architecture: Building a Discipline and Modernizing a Profession, Diss. (U.C. Berkeley, 2009).
- 29 Jean-Pierre Protzen, "Design Theories and Methods at Berkeley," in *Design on the Edge*, 163-166; and Howard Davis, "Christopher Alexander at Berkeley," in *Design on the Edge*, 178-184.
- 30 In 1965, the essay won a Kaufmann International Design Award given by the Edgar J. Kaufmann Foundation and the Institute of International Education.
- 31 See Jean-Pierre Protzen's cogent refutation of Alexander's *A Pattern Language*: "The Poverty of the Pattern Language," *Concrete* 1, 6 (1977).

agency. Math, or a quantifiable set of relationships, replaced the inspiration of nature. Where math met nature, as it would have to in urban planning, it would do so not in metaphorical terms, but by capturing the underlying, systemic structure of nature. Put differently, Alexander dismissed organic planning as arbitrary because a theory of design with the weight to make people act and change the world could not be capricious. But metaphors, which deal in ambiguity and imprecision because of the analogical work they do, hide their tracks in order to make their substitutions seamless. The semi-lattice exposed the organic metaphor beneath its equally fraught metaphor.

The semi-lattice's power was twofold. First, it was empirical, prescriptive and active. As architectural research matured in the 1960s, especially at U.C. Berkeley where Alexander taught, scholars in architecture departments searched for empirical methods to ground their research and to give authority to their practices within the academy, industry, and government.<sup>28</sup> Alexander joined Berkeley's faculty to build up what would come to be called "design theories and methods," a field that sought rigorous methods for design, particularly at first in systems thinking.<sup>29</sup> "The City Is Not a Tree" was a major salvo in the area, one that was more influential for being written for a popular audience rather than in a strictly academic forum.<sup>30</sup> Second, this emerging paradigm, whether we think of it as a semi-lattice, or more broadly as a systems approach, implicitly made extraordinary claims about agency.<sup>31</sup> In supplanting nature with math, it placed in the architect-planners' hands something over which they had control-the algorithms of the system-instead of cruel, indifferent nature. Where people are at the whim of the organic city, they control the city produced by their own system, or so the conceptual world of the two metaphors suggests. As the creator and manipulator of urban systems, the planner rises with demiurgic power.

Cities organized like trees denigrate nature, transmogrifying them, according to Alexander, into unrelated fragments:

The city is a receptacle for life. If the receptacle severs the overlap of the strands of life within it, because it is a tree, it will be like a bowl full of razor blades on edge, ready to cut up whatever is entrusted to it. In such a receptacle life will be cut to pieces. If we make citieswhich are trees, they will cut our life within to pieces.<sup>32</sup>

In his highly figured language, the tree metaphor becomes the very cause of the modern, denatured city, which the systems planner, armed with his new methods, subdues and transforms back into a functioning city. The metaphor of the system would become ubiquitous in urban planning, from Vincent Ponte Place Ville Marie in Montreal for I. M. Pei and Associates to Edmund Bacon's use of it in the second edition of *The Design of Cities* (1967 and 1974), where sought an ever-responsive planning circuit of feedback.<sup>33</sup> It saturated Metabolist literature, the Otterloo CIAM/ Team-X Congress, and the Delos meetings of the 1960s, where networks supplanted overt biological metaphors.<sup>34</sup> The semi-lattice joined a broad metaphorical assault on the organic city.

But the system could not escape the organic. The latter infected their thinking and language. Bacon, for example, had been influenced by the Sixth Delos Symposium, where intellectuals from many fields compared DNA models and evolution with guided missile systems and urban planning. In the revised edition of his book, Bacon compared the role of nature in shaping DNA to the role of planning in "human institutions" or cities. Instead of imposing a plan, he proposed "a continuing process of hypothesis formation and reformation in response to feedback."35 It was left to the planner to institute and respond to the system of feedback. The emerging technology was essential because of the "general speeding up of the pace of development" and "the phenomenon of simultaneity." Old models of planning were simply too static. Bacon implored the social sciences to recast their thinking, to develop feedback tools so sensitive to the city and its inhabitants that they would supply planners with "...A continuous flow of insights" that would be fed back to the planning loop. People would act upon this "continually changing system of order...to such a degree that some sort of coherent organism is produced."<sup>36</sup> The system led straight back to the organism.

There were also serious differences between the two. The system was more than a device of measurement, surveillance, and rational organization, the conventional modernist modes of control. It was dynamic and active. It attempted to assert a behavioral adjustment into the planning process, allowing planners to divine what a city and its inhabitants needed in the near future. Ergo, Alexander's problem with the tree, whose set pattern of trunk and branches (at least in his representation) limited the responsiveness of planners and fixed the pattern of future development. The contrast to organic metaphors could not be starker—even if systems thinking emerged from the sciences, continued to use organic metaphors, and inherited the aesthetic and diagrammatic impulses of the earlier paradigm. In the hands of planners, the system was seen as a technology or tool, one self-consciously taken up for the purpose of predicting and controlling the city's future.

#### CONCLUSIONS

The shift from organic to systems metaphors came with multiple layers of meaning. It articulated the displacement of romantic and Darwinian modes of thought that revered nature as the primary world force. In its place, the system posited something spawned of culture, something society could manipulate to improve itself. The two are metaphorically distinct. The first compares the city to nature in order to restore some of the qualities of the latter to the former, especially in light of a century

#### ANDREW SHANKEN

150

- 32 Alexander, 55.
  33 Peter Blake, "Vincente Ponte—A New Kind of Urban Designer," *Art in America* 57: 5 (Sept.-Oct., 1969).
- Mark Wigley, "Network Fever," *Grey Room* 4 (Summer 2001): 82-122.
- 35 Bacon, 258.
- 36 Ibid.



Fig.7 Diagrams of constellations of neighborhood units, Hermann Herrey, Constantin Pertzoff, and Erna M. J. Herrey, "An Organic Theory of City Planning," *Architectural Forum* 80, 4 (April, 1944), 136.

37 Norbert Wiener, The Human Use of Human Beings: Cybernetics and Society (Boston: Houghton Mifflin, 1954). and a half of industrialization. Systems theory, by contrast, was a managerial solution. It attempted to divine the indelible patterns behind nature—and everything else. At its most ambitious, it imagined an urban behavioral feedback loop that could help planners anticipate behavior. Such thinking married the predictive hubris of "the miserable science" to the computational surge of the postwar decades, and the social imperative of the period to find democratic and inclusive modes of planning. Within the system, nature becomes one data point among many.

At its most mechanical, this vast feedback loop trained Norbert Wiener's theories of cybernetics, developed from his experiments with weapons guidance systems, on postwar citizenry in order to deploy a more perfect city.<sup>37</sup> Even so, the system could not escape the organic metaphors it displaced because many of its adherents were closely linked to the earlier context and, as a metaphor, it could never convincingly cover up the essential ineffability (and ultimately, the ineffectuality) of urban planning. The metaphorical spectacle hid the undergirding faith of modernism in design as a mode of salvation. As a component of the physical determinism positioned at the heart of that salvation, the system displaced design, and, ipso facto, the designer. As a method, systems theory quickly encountered the same impasse of functionalism, namely the extinction of the designer. Paradoxically, at the same time, the metaphor of the system struck at one of the core concerns of agency in planning: the human use of humans in cities.

Christopher Alexander clearly placed these two metaphors into false contention. The Social and Functional Analysis set the terms of the later systems approach by imagining a complex of interacting municipalities, work, commerce, recreation, transportation, and so on. More broadly, biology supplied the most important analogy for systems thinking in the form of the organism, with its complex of respiratory, circulatory, and neurological systems, not to mention the feedback loop of sensory perception and learning. The ecosystem, whose first use came in 1935, would offer something comparable for all of nature and put it into systems language. The system could not dispose of the organism.

The organicism of the 1940s reacted to the urban problems of industrial capitalism and war by drawing on nineteenth-century natural metaphors for social cohesion. In a post-atomic, Cold War world—with the waning of the industrial order, highways radically altering cities, and the beginnings of the computer age—the systems metaphor absorbed biology, physics, economics, engineering, sociology, communication, movement, behavior, computing, and the city into the same *Gestalt* as nature. The system imagined a form of comprehensive planning in a moment of deep antipathy to planning—and to cities.<sup>38</sup> And yet the technical pretense of the system was in step with the cultural climate of the

<sup>38</sup> Morton and Lucia White wrote the The Intellectual Versus the City (Cambridge: Harvard University Press 1962).

Cold War. It promised that most holy grail of the social sciences: a means of seeing through to the structure of reality that could be used to predict. Systems theorists thus predicated their work on unusual assertions of power. Gazing into the patterns or algorithms of systems theory, planners would see through to the structure of change and manipulate it.

Systems thinking was utopian because it carried the potential to radically transform the world. By placing social action in a feedback loop with the built environment, the future would be collapsed into an everthinner present, reeled into the pre-existing structure of the system. The ruptures of modernity, and the space and time distorting technologies that created and characterized modern cities, would be constantly absorbed and folded back into the city. Organic planning signified the enervated climax of nineteenth-century thought, while systems planning marked the optimism of Structuralism, as if the city, or even society at large, in all its irrational complexity, could be subdued by charts—and here is where Alexander's semi-lattice and the LCC's biomass remain entangled.

152

ANDREW SHANKEN