

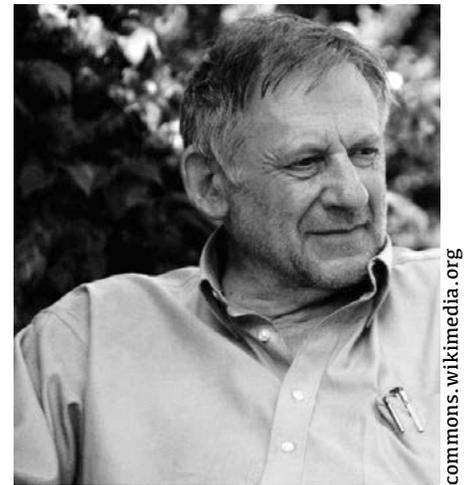
REVIEW: A City is not a Tree, Christopher Alexander

Claire Vernon

A City is not a Tree, an essay by Christopher Alexander, is a concise yet critical look into the social and structural overlap of communities that continues to be relevant to city design over 50 years after its publication. Alexander argues that patterns of overlap in both social and built structures are natural, essential, healthy components of communities. In this review, editor Claire Vernon muses about the relevance of Alexander's ideas to Chicago's structure.

THE ESSAY AND ITS AUTHOR

A City is not a Tree, an essay published in 1965, is a concise yet critical look into the social and structural overlap of communities. The author, Christopher Alexander, is a Professor Emeritus of Architecture at the University of California, Berkeley. Over the course of his career Alexander has contributed thought-provoking ideas and many buildings to the architectural field, and his critical awareness of pattern and logic heavily influenced computer science and computer languages. Alexander argues that patterns of overlap in both social and built structures are essential, healthy components of communities. When natural social overlap is ignored in our built design, we push communities towards dissociation and isolation.



Christopher Alexander

STRUCTURES: TREE VS. SEMI-LATTICE

Alexander's essay examines connectivity in human social interactions and in deliberately designed, physical elements of cities. He insightfully describes what he calls the Tree structure of designed construction and the Semi-Lattice structure of social interactions, offering rich examples that allow his readers to access and apply his thesis. A Semi-Lattice pattern of connectivity recognizes all elements of overlap, both complete overlap and partial overlap. Two coinciding elements within a Semi-Lattice set do not have to be disjoint from the same set of other elements. This contrasts with the Tree structure of the title, where the items within the Tree either overlap completely or not at all.

“building ourselves into a Tree structure forces unnatural separation of normally intertwined aspects of life”

Visual depictions of Semi-Lattice and Tree structures are shown in Figure 1. Alexander argues that building ourselves into a Tree structure forces unnatural separation of normally intertwined aspects of life. Despite our lives and communities being foundationally connected in a Semi-Lattice structure of complex relationships, we build the physical aspects of our home cities as simple, well-organized Trees.

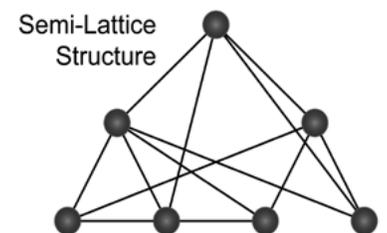
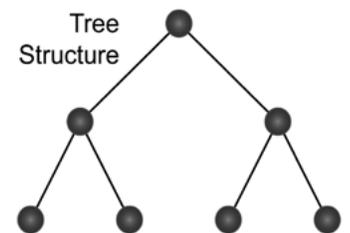


Figure 1. Tree and Semi-lattice structures

THE CHICAGO TREE

As Alexander delved into Tree-example city plans, the maps conjured the image of Chicago's El Train map in my mind. The CTA train lines form a very simple Tree, with the downtown Loop serving as the central "common element" for the city and each line reaching out to one set of neighborhoods. The **Brown** and **Red** Lines connect the Loop to the north neighborhoods and to the **Yellow** and **Purple** Lines in the nearest north suburbs. The **Green** and **Red** Lines connect neighborhoods south of the Loop to downtown but do not connect southern suburbs. The **Blue**, **Green**, and **Pink** Lines serve neighborhoods west from the Loop, and each extends into the very near west suburbs. The **Orange** and **Blue** Lines run through the Southwest and Northwest segments of the city, respectively, and connect the two major airports to the Loop and the public transit system. From each of these neighborhoods, a person is easily connected to other neighborhoods along "their" line, but in most cases they must travel to the city center Loop/Downtown in order to access neighborhoods served by a different line.

As visualized by both the CTA map and my own structural rendition of the train lines, the city trains tell the connectedness of both neighborhoods and city regions to the business center—the Loop/Downtown. The north slice of city connects to the Downtown with 35 city and 10 suburban stations; by contrast, the south connects with 21 city and no suburban stations. To the west, 30 city stations and 8 suburban stations link people to the Loop. The diagonally radiating Orange and Blue train lines tell a similar story of disproportionate connections: 6 neighborhood stations to the southwest and 10 stations to the northwest over an equivalent distance west, 7 and 16 total stations to the southwest and northwest, respectively. Chicago's public transport trains form a tree, and its branches are not all equally leafy.

TREE-STRUCTURE AND RESTRICTED MOBILITY

Each residential region of the city can access the downtown via public transport, with ease of movement depending primarily on the density of stations near one's home. Accessing residential areas served by a different train line, however, requires multi-leg trips involving complications like multiple train lines, train-bus transfers, and extended walking or biking—a solid time investment. Another option is to drive, which assumes that one has access to a car and can find or pay for parking, both near their home and near their destination. Driving longer distances presents a similar travel challenge to the public transport train lines, as the

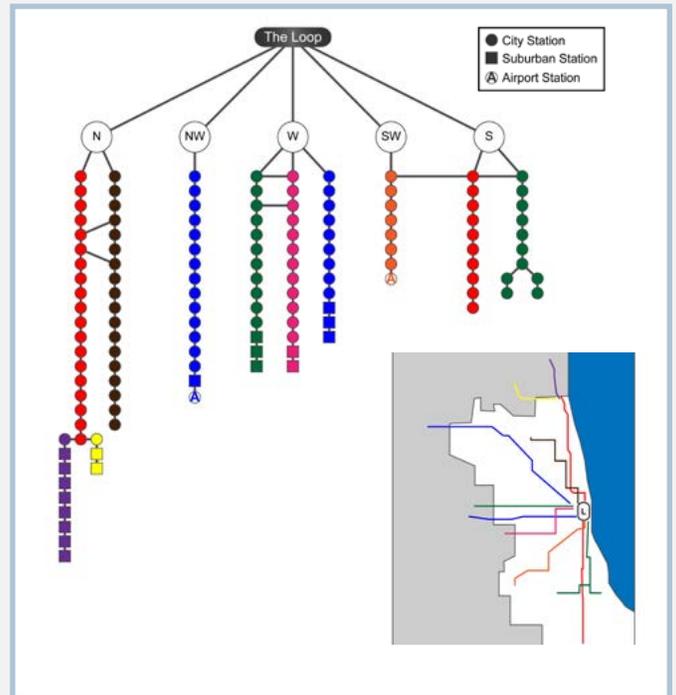
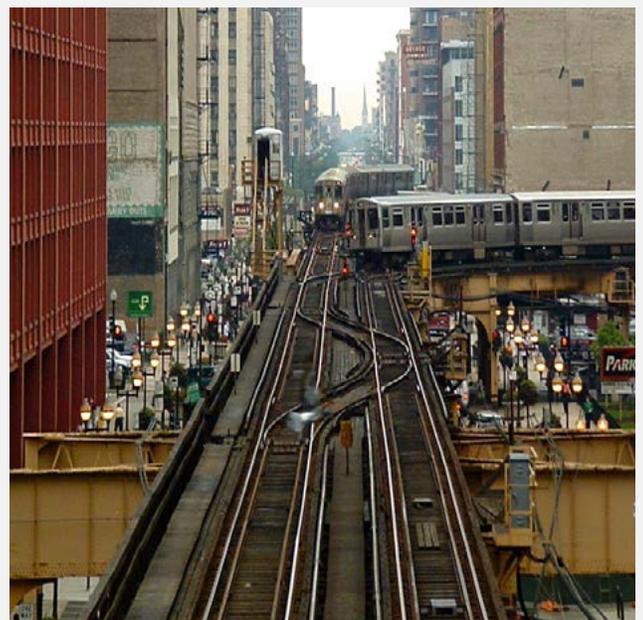


Figure 2. Schematics of CTA map, Claire Vernon

“The CTA train lines form a very simple Tree, with the downtown Loop serving as the central ‘common element’ for the city and each line reaching out to one set of neighborhoods.”



The El tracks



the interstates and highways connecting the City of Chicago to its greater suburban region echo the structure of the El trains—radiating outwards from the Loop in Tree-like fashion. This reductionist view of connections becomes more complex when we consider both local streets and the bus lines running along them, but these connections serve adjacent and within-neighborhood mobility more so than inter-neighborhood mobility. As a larger city, Chicago’s physical connections form a tree. The most mobile we can be is if we live, work, and play along a single branch, a structure that separates us from those people living, working, and playing along the other branches.

Public transport in Chicago bridges essential elements of people’s lives: residential neighborhoods; the business-center downtown; recreational lakefront, park, and museum locations; medical centers; transport hubs like airports, bus stations, and regional train stations. Even disregarding the limitations implicit in a Tree-structure, the south side of the city pales in comparison to the connectedness of the west side and especially the north side. Chicago continues to be one of the most segregated cities in the U.S. [1] , and the Census Dot Map compiled by the Cooper Center [2] shows that much of this segregation aligns to racially homogenous “pizza slices” of city that radiate outward from the Downtown. The unequal distribution of El Train access points further restricts Chicagoans’ mobility when the neighborhood they call home lies along these more bare branches. We would be blind to ignore the intersections of restricted physical mobility with racial segregation and restricted class mobility.

Major components of our mobility infrastructure like train lines, train stations, interstates, and local highways are not easy to change and such an endeavor would certainly be expensive. Additionally, Alexander notes that the Semi-Lattice of social connections in our lives is a fluid, natural reality, and it cannot be forced. This presents an additional challenge to those who aim to combat the social separation, segregation, and dissociation resulting from Tree infrastructure in cities. Simply increasing stations and installing lines of travel in a grid-lattice does not intelligently connect the essential components of people’s lives and communities.

CONCLUSION

So what are we to do? The answer is not simple. Alexander concludes that no modern cities have succeeded in building themselves a Semi-Lattice, though the people within them likely force social Semi-Lattices into existence in their interpersonal interactions and daily routines. Over 50 years later Alexander’s essay remains relevant, and his subsequent career has been devoted to describing observable patterns in life and applying these patterns to architecture and infrastructure. While he argues that the human mind so strongly desires the order and simplicity of Tree structures that we seem incapable of designing a Semi-Lattice, he still advocates that we consider foremost the lives of the people who will live in our built structures. Each day around the world new cities are built and established cities are remodeled. Each time we build around ourselves we have a new opportunity to reflect Alexander’s Semi-Lattice in our cities.

**“We must align
our homes with our
lives.”**

Perhaps we build and renovate our streets with room for bikes to fluidly share these pathways with cars, buses, and taxis. Perhaps we consider pedestrian traffic when organizing neighborhoods and thoroughfares. Perhaps we promote the co-existence of residence and business. The physical organization of these connections dictates which connections are strongest, regardless of the organization that we desire or intend. Whatever the answer to our Tree-structure problem, we must actively choose to build physical connections where there are social connections, rather than building physical connections because they are neat and tidy. We must align our homes with our lives. Not doing so allows the city’s physical connections to sever our lives’ natural connections and as Alexander says: “If we make cities which are trees, they will cut our lives within to pieces.”

Claire Vernon is a PhD candidate in the NU DGP studying neuroscience. Her public health interests include women’s health, mental health, and health disparities.

1. <http://money.cnn.com/2016/01/05/news/economy/chicago-segregated/>. Article accessed May 8, 2016.
2. <http://www.coopercenter.org/demographics/Racial-Dot-Map> Article accessed May 8, 2016.