In Different Spaces

Interpreting the spatial organization of societies

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Keywords:
Spatial organization, societies, geography, quantitative methods

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Thinking about the topic of Space and Society in the context of this Space Syntax symposium stirs memories of my first academic appointment, teaching in the Department of Geography at Northwestern University, in Evanston, Illinois. The Department of Geography no longer exists, having been disestablished in the late 1980s, with its handful of continuing senior faculty taking up positions in departments ranging from anthropology to petroleum geology. When I first joined the department in 1965, however, fresh from dissertation fieldwork in Kenya, it was considered the most advanced center in the country for teaching and research in the new quantitative and theoretical geography that was rapidly transforming the discipline.

The core of departmental interests at the time was the construction of a mathematical science of space, capable of describing and modeling all empirical geographies in terms of their formal spatial parameters. The aim was to produce a new geo-metry, a sophisticated mathematical language capable of summarily describing all geographic forms and configurations, from the local to the global. If this could be achieved, it was thought, then Geography could be added confidently to the list of true sciences. And it was at Northwestern, more than any place else, where this ambitious effort was pioneered.

The graduate curriculum at the time reflected these goals. Students were expected each term to take courses in calculus, finite mathematics, and operations research outside the department, while inside they toiled through a sequence of mathematical applications to spatial analysis, starting with "point patterns in the plain," measuring all sorts of punctiform distributions from the location of county seats in Iowa to the pattern of liver spots on the skin. Students would then advance to "linear patterns on the plain," modeling the topological structure of networks and flow matrices. I once used one of these network models to measure urban accessibility within the national transportation system of Nigeria, pointing to an area of peak accessibility that I suggested might serve as the site of a new capital city should Nigeria choose to relocate its capital from coastal Lagos. Although I am fairly sure that my work did not influence the Nigerian government, one of my preferred sites, Abuja, is now the national capital city.

For the students who succeeded in conquering two dimensions, there was an advanced course on multidimensional trend surface analysis, a kind of ultimate mathematical description of spatial differentiation and areal covariation over the earth's surface. In my own work on development geographies in Africa, I used a version of such trend surface analysis to depict what came to be called modernization surfaces, multivariate spatial representations of geographically uneven development at a given point in time. Such studies of the "geography of modernization" helped to create a new subfield of development geography, which persists to the present. I was not trained to teach any of these courses, but instead took on the task of demonstrating how these models could be applied to real-world geographical analysis.

Although I had no doubt that such work was rigorously scientific and analytically useful, the challenge of applying these formal models and measurements of spatial configurations to concrete social, economic, and political geographies–that is, to look more closely and critically at the relations between space and society—became increasingly difficult. When students were sent to me to formulate a real world dissertation topic (rather than just continue honing their mathematical skills, as they preferred to do), they found the issues I suggested too "noisy" and difficult to handle with the sophisticated methods they had learned. Could I find something smaller and simpler for them to "explain" through formal mathematical description, they asked, for they genuinely believed, as they were taught, that their methods of spatial representation actually explained geographies? It did not take long for me to become aware and concerned about the limitations of this new spatial science, especially the degree to which the methods themselves began to determine what could or should be studied.

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I was certainly not alone. Eventually, many geographers became disillusioned with what was seen as an excessive narrowing of geographical analysis–and the scope of its real world applications—to the formal spatial science espoused with such mathematical sophistication at Northwestern and other major geography departments. By the early 1970s, such disillusionment with "positivist" spatial science was widespread as geographers, many of them trained in mathematical geography, sought alternative paths to rigorous geographical analysis that were not reduceable to pure geometries. A new post-positivist geography began to take shape, primarily along two lines of development, a humanist and phenomenological cultural geography on the one hand, and what would come to be called Marxist geography on the other. Both would significantly influence geographical research and education in the century's last three decades, giving rise to what is now called a new critical human geography, enhanced by rounds of epistemological critique from feminist, anti-racist, postcolonial, poststructuralist, and postmodern scholars.

Recalling this history is not meant to suggest that Space Syntax and Mathematical Geography can be directly compared. The Space Syntax movement, as I understand it, is much more pragmatic in its aims and more specifically localized and urban in its scope. It has also found a particular professional and practical niche, providing descriptive and modeling tools to assist creative individuals in designing buildings and the small scale urban built environment, i.e. clusters of buildings and their immediately related infrastructure. Space Syntax continues to work effectively in areas of applied research and education that arise at the intersection of architecture and urban design and various forms of physical planning. What was happening years ago at Northwestern was much more academically ambitious, aimed as it was at a paradigmatic transformation of an entire discipline. Looking back at the develop-

ment of post-positivist geography, however, can provide some useful insights that relate to the particular challenge presented to me at this symposium, that is, to participate in an effort to "set the discussion of the social logic of built space," which I presume refers to the Space Syntax approach, "in the broader framework of critical debate and inquiry"on the specific theme of Space and Society Today.

In many ways, the historical development of post-positivist geography was originally stimulated by just such an ambitious setting of an accomplished mode of spatial analysis, in the form of the newly mathematized spatial science, into a wider critical debate on how to explain and interpret the spatial organization of society. What occurred early on was a realization that an essentially physical conceptualization of space overly narrowed the interpretive scope of spatial analysis and frequently suffered from what philosophers call misplaced concreteness. That is, the theoretical and analytical object that was envisioned as a causal or explanatory variable, or as the generative source of a "social logic," was actually not a cause but a consequence of other, often unseen and unexamined, social and spatial processes. Positivist and post-positivist geographical analysis thus seemed to be focused on significantly different spaces, one fixed almost entirely on surface appearances and physical forms, the other on what was seen as socially produced spaces or what would later be called *social spatiality*. Let me elaborate further on the differences between these two notions of space.

In both Space Syntax and Mathematical Geography, space tends to be defined almost exclusively as pure extension, form, or geometry, reflecting the traditional ways space has been treated in physics and mathematics. This essentially physicalist conceptualization of space focuses spatial analysis on configurations, morphologies, and the arrangement of physical phenomena on the earth's surface. Analysis of these spatial forms, such as the built environment of cities or the hierarchical structure of central places in a national urban system, typically involves mathematical description, mapping, and correlations of covarying spatial configurations and designs, in the expectation that fundamental and generalizable patterns inherent to these spatial forms might be discovered. This search for formal orderliness and empirical regularity underpins both Space Syntax and Mathematical Geography.

It is in this search for spatial orderliness and regularity that Space Syntax methods become most useful and effective, particularly with regard to the design and/or physical planning process. Every form of design is, in one way or another, an arrangement of things in physical space. At a very basic level, so too is every human settlement, from a hunting camp to Los Angeles or London. In this sense, it is entirely accurate, if not tautologically self-evident, to say that all aspects of the human occupance of the earth's surface can be seen as spatially configured, as describable in a "common language of space." Parsimonious description of surface spatial configurations, syntactical analysis of apparent structural regularities, the correlation of one spatial pattern with others deemed as at least statistically dependent, and other related methods provide valuable information for individual designers, whether urban or otherwise, and for certain urban policy makers searching for some systematic basis for making certain kinds of locational or land use decisions.

Problems arise, however, when such accurate descriptions are projected too far as explanations of social behavior, or as primary factors shaping the phenomenology of spatial experience and everyday life, or as foundations for a general theory of the city. At the core of these

problems is the conceptual autonomy of the physical space described in Space Syntax from the fundamentally social processes that produce spatial form. At the scale of a single building, it might be presumed that discovered structural relations, shapes, and forms are the products of creative human designers, but this assumption oversimplifies the social logic of how concrete spatial forms influence individual and collective behavior. Stated slightly differently, these physicalist methodologies are fixed too exclusively on the formal properties of materialized spatial configurations, giving too little attention to the complex social forces that exist behind their appearance. I must emphasize that I am not saying that physical form does not influence human life and behavior, but rather that it can be highly misleading to think of this physical influence as an independent factor or relation, especially in attempting to understand the complex interplay between spatial and social phenomena, or between space and society, to get us back to our theme today.

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Building on the extensive debates on the retheorization of space that have been flourishing over the past twenty years, it can be argued that a more historically and socially grounded definition of space, one that draws primarily from social theory rather than the traditional literature in physics and mathematics, is more appropriate for developing both a theoretical and practical understanding of the relations between space and society. The emergence of post-positivist geography has involved just such a movement away from essentially physicalist definitions of space and from those fascinating discussions of the absolute and relative properties of abstract space found in the work of physicists and philosophers of science, and toward a more socially and historically concretized and process-oriented notion of the production of space. In this context, rather than being seen only as a physical backdrop, container, or stage to human life, space is more insightfully viewed as a complex social formation, part of a dynamic process that actively and often problematically produces what I have earlier termed social spatiality, an embracing aspect of all human life that contains within it, but is not confined to, the physical parameters and formal designs of the (socially) built environment.

When looking at social phenomena, therefore, physical space matters a great deal, but the spatiality of social life extends far beyond physical forms and directly measurable surface appearances. Moreover, widening the scope of the spatial dimension of society reveals additional interpretive pitfalls that arise from hinging spatial analysis on fixed material forms and morphologies. I refer here in particular to what Henri Lefebvre once called the illusion of opaqueness, the belief that essences are captured by surface appearances, a belief that connects back to my earlier comment on misplaced concreteness. Built into this illusion of opaqueness is a more empirical trap, what statisticians call the "ecological fallacy," another example of how false conclusions can be so easily drawn about the causes of empirically defined phenomena.

One example of such illusiveness involves so-called "defensible space" studies which suggest that the design of housing developments has a significant effect on the incidence of crime and general well being. Methods which successfully correlate particular designs with variations in crime rates all too often instil beliefs in spatial causality that are not necessarily sustainable, even though the analysis may prove attractive to housing authorities and developers. Such studies are particularly subject to another pitfall, a "territorial fallacy" whereby the space analyzed is made into an island unto itself, disconnected from the wider urban milieu,

so what appears as a successful reduction of crime in one area may merely be its displacement to another area. Equally troublesome, the discovery of a statistical link between design and crime rates, or other such close correlations between physical form and behavior, is often exploded into ever broadening concepts of design determinism and all-encompassing superficial spatial theories of the city, overlooking the possibility that the discovered linkage or correlation is itself the product of other social and spatial forces operating to shape urban life. Here again, surface appearances and configurations become highly deceptive, especially perhaps when they prove superficially useful.

A particularly insightful way of illustrating the differences between a physical versus a more socially-based definition of spatiality is provided in the three interpretive realms of spatial analysis defined by Henri Lefebvre, arguably the leading spatial theorist and philosopher of the twentieth century. In his perspective, the space of society, as social spatiality, is seen as simultaneously perceived, conceived, and lived, or as he also describes them, as material Spatial Practices, evocative and imaginative Representations of Space, and the complex, combinatorial, and never fully knowable Spaces of Representation. Space Syntax and Mathematical Geography provide specialized ways of describing the surface properties of the first space of Lefebvre's now well known triad, the perceived or empirical space created through material spatial practices, but do not probe at all into imagined spaces or very deeply into the rich human complexities of lived space, except through highly speculative leaps and often illusory projections.

Social spatiality, as it has come to be defined, is simultaneously real and imagined. It functions as form, configured materially as things in space as well as mentally as thoughts about space; but also as process, as a dynamic force that is always actively being produced and reproduced. In this sense, the form and formation of social spatiality is inseparable from society, part of what I once described as a socio-spatial dialectic in which social relations (forms and processes) shape and are simultaneously shaped by spatial relations (forms and processes). And all this develops over time, creating ever more complex and problem-filled intertwining of the spatial, social, and historical aspects of our lives, an existentially encompassing process that Anthony Giddens, another key figure in the reconceptualization of spatiality, described as the time-space structuration of society. It must be emphasized that this concept of structuration differs significantly from the notion of syntactical structure in the Space Syntax definition, in that structuration is embedded in socio-spatial processes rather than the physical properties of spatial forms and configurations.

That Space Syntax analysts and critical human geographers dwell for the most part in significantly different spaces, as suggested in my title, these differences can be easily obscured in the "common language" that is used in writing about space and such spatial phenomena as the city. The following quote, taken from Bill Hillier's essay on the "Common Language of Space," downloadable from the Space Syntax website, may seem perfectly reasonable to an urban designer imbued with a Space Syntax or the related architectural typology perspective but appears bewilderingly misdirected to a critical human geographer.

> The idea proposed here is that the "generative logic" of the city is essentially about space: more precisely about how the now piecemeal now orderly aggregation of buildings creates a continuous pattern of space which links the buildings together into a system and in so doing constitutes in itself the essential structure of the city. (p. 16)

I am reminded here of the quip about Americans and the British as one people separated by the same language. Sharing a common spatial language does not always lead to a common understanding.

Over the past half-decade, the critical debates on the social production of space and human spatiality have expanded in extraordinary ways, attracting the attention of nearly every discipline in the social sciences and humanities. This provocative "spatial turn" has widened the scope and intensity of the spatial debates to a level far greater than at any other point in at least the past 150 years. With this rising tide of interest all existing spatial discourses and such spatial disciplines as geography, architecture, and urban studies have benefitted. Indeed, the expanding interest in Space Syntax approaches and the bold attempts to extend their usefulness into broader areas of social concern is in part a reflection of this spatial turn, and should be encouraged, at least insofar it stimulates an active engagement with the larger debates on space and social spatiality.

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But I would like to leave you with something more than this ecumenical conclusion, for all we spatial thinkers still have a long way to go in creating a comprehensive and critical theory of what I suggest should be called cityspace, or the spatial specificity of urbanism. Specifically spatial theories of the city have tended either to focus on material appearances, as with Space Syntax, GIS, and positivist geography, or on social and historical processes that underlie and shape these surface appearances, as in Marxist and economic geography. Too often overlooked in these approaches has been the intrinsic spatial dynamic of cities, the creative and innovative forces that arise from the formation of densely interactive and interdependent agglomerations of people, their activities, and their built environments. This stimulus of urban agglomeration–I have called it synekism after Aristotle's term for the dynamic formation of the polis or city-state–has rarely been studied directly, and even more rarely has it been conceived as a causal or explanatory factor in the long history of human and societal development, even though we intuitively recognize that societal development and change has always emanated from cities and sense the importance of proximity, density, and the friction of distance in everyday behavior.

A century or so ago, with the rise of the social sciences and of scientific socialism or Marxism, an older tradition of environmental determinism was wiped out in the varying assertions of the power of unencumbered social will and consciousness, the powerful notion that people make their own history despite extra-social constraints emanating from their physical environment as well as from past events and inheritances. For most of the twentieth century, the "baby" of geographical or spatial causality and explanation seeped away with the dirty bath water of excessive environmentalist theorizations, surviving only in such decidedly spatial disciplines as geography and architecture, where belief in the powerful influence of built or socially produced spatialities remained a sort of in-house secret, not to be mentioned in mixed academic company, especially among those with a less well developed spatial perspective. But all these arguments hinged around a physicalist conception of space as something outside society, in a naturalized environment, a background container or stage.

The reconceptualization of space as socially produced spatiality, however, encourages a revival of explicitly spatial explanation of social, economic, and political phenomena and behavior, especially with regard to the most prevalent and powerfully influential of all socially created spaces, the city. Long disregarded as a major factor in the development of human societies, urban social spatiality is now beginning to be looked at as a significant force in every transfor-

mative moment in human history, from the invention of agriculture more than ten thousand years ago to the globalization and economic restructuring of capitalism today. To take this argument further, however, opens up another still another story.