

Interacting Questions and Descriptions

How do they look from here?

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Ground

Space syntax is, quite visibly, a theory of description applied to the built environment. It deals with the relational patterns that arise as space is marked, divided, enclosed, differentiated, shaped, and organized by means of physical boundaries. Underlying this descriptive emphasis is a question ostracized from architectural discourse for a portion of our recent past: how is built space to be understood as a social artifact, how does it function, how does it support or constrain behavior, how does it reproduce social relationships, how does it generate social effects? The key towards a syntactic theory of function is provided by the description of space use as another kind of spatial morphology. Examples of generic morphological patterns that mediate between layout, social function and cultural meaning include: movement, co-awareness and encounter; exploration and exposure to information; the functional labeling of spaces. The word “syntax” bridges between the twin motivations, to describe built space and its occupancy and to understand how these patterns are means through which we recognize and construct society and culture. As an analytical, quantitative and descriptive tool, space syntax is used to test hypotheses in different domains of inquiry in which controlling for layout as a variable is an issue. The purpose of these prefatory notes is to offer a point of view of main lines of argument associated with space syntax in order to sketch-map some themes for the third international symposium. The argument is rather informal, it would probably not have made it through the refereeing process.

Aspects

Description

Space syntax is situated mostly between words and drawings, or maps: It manifests the underlying spatial structure of the environments they depict. In a different sense, space syntax is potentially situated between words and paintings, or photographs, or even film and video. It directs attention to the literal or phenomenal spatial context of the points of view they record or project. Space syntax involves two fundamental procedures. First, space is represented as a pattern of related elements that are usually 1 or 2 dimensional but could as easily be 3 dimensional depending on modeling and computational sophistication. Typically, these elements consist of visibility polygons, lines of movement, or convex areas of potential co-presence and co-awareness. The identification of such spatial elements requires the

recognition and manipulation of the shape of the physical environment. However, the interrogation of shape proceeds from intuitions pertaining to the way in which space is occupied, explored and understood as part of everyday life. Syntactic geometry is, in this regard, linked to a phenomenology of spatial experience, admittedly one which is rather analytically aimed and rather sharply focussed. The second procedure deals with local and global patterns of connection, based on relations of permeability, intersection or overlap between elements. In studying connections, especially at more global scales, we always make a transition from direct perception to abstract understanding. We can occupy and use larger spatial systems because we understand relational patterns synthesizing partial and incomplete perceptual evidence. While the first procedure of syntactic analysis is essentially geometric, the second deals with topological properties represented as graphs. The main syntactic variable that describes space as a pattern of global connections is “Integration”: More integrated spaces are more directly accessible from all other parts of a system. “Connectivity” is a local measure of connection; it simply indexes the number of direct links from a space. The interaction between the recognition of geometric shape and the analysis of topological relationships is at the core of space syntax as a theory of description. Based on this, aspects of the structure of experience, perception and occupation of space are mapped and visualized back onto the building plans.

Built space is ultimately measured as a relational pattern of integration and segregation, distinctions and interfaces, positional similarities or differences, access and exposure. As such terms got defined with greater clarity and precision, so the intuitions that have animated space syntax became better formalized. Since the early 1990s, articles using or developing space syntax are published with increasing frequency in *Environment and Planning (B)*, the journal of formally rigorous architectural and urban research founded by Lionel March and now edited by Michael Batty. This is where the term “space syntax” appeared first as the title of an article by Bill Hillier, Adrian Leaman, Paul Stansall and Michael Bedford in 1976. In the periodic interactions between syntactic ideas and methodologies initiated at UCL with models of built form initiated at Cambridge and later at UCLA and the Open University, one could perhaps read a story of how descriptive ideas originating with intuitions of architecture, society or culture meet with descriptive ideas grounded in mathematical and computational formalisms. Lionel March gave both the opening and the closing address at the Second International Symposium on Space Syntax, in Brasilia, in 1999, recognizing research traditions that often develop in parallel, but also sustain evident intersections.

Why operate between words and drawings, why focus on description as a theoretical problem? To emphasize description is to anchor theory onto form, to critically engage the relations between seeing and understanding, conceptualization and representation. Description is the bridge between the properties of form and judgements regarding building function, behavioral setting, cultural meaning, historical significance or aesthetic interest. Yet, the discourse of architectural theory does not always enhance visibility. Words sometimes wrap over forms, they characterize or evaluate almost without explicitly pointing to anything in particular. Often, even relatively complete sets of drawings are absent from the books and the average student is familiar with the difficulty of documenting the design of a building, let alone its construction or its use. Should we imagine that printed architectural discourse is sometimes a multiplied but also distorted echo of studio interaction, from which faces, gestures, speech, sketches and models are withdrawn? Not true for space syntax. Space syntax

was born in the late 1970s in a research unit, not a design studio, the Unit for Architectural Studies at University College London, under the direction of Bill Hillier. The research staff, as well as the majority of the students attracted to the M.Sc. degree in Advanced Architectural Studies, and then on to doctoral studies, were, and still are, architects. In a research culture geared to testing propositions, descriptions themselves were naturally not taken for granted. They became reflexive, subject to explicit principles regarding assumptions, procedures and notations. By implication they could be critically contested and shared. Hence a community of inquiry, hence this rather untypically specialized symposium and the ones that preceded it, with the same questions always in the background: How do we describe? And then, what theories can we develop about the principles that generate descriptive regularities? Hence also, for quite some time, the endemic tension between these research preoccupations and the twin emphasis on normative positions and processes of making that dominates the design studio.

The depth of questions asked in space syntax meant that initially one could not easily dissociate judgement, “what is there to be described”, from technique, “how to do it”. These get better disentangled once the nature of the object is precisely conceptualized. For a time, however, describing and conceptualizing proceeded in close step, between words, diagrams, drawings, numbers and even ideographic notations. It is retrospectively possible to trace a gradual shift. Description originally engaged the rather difficult foundations of conceptualization: what is the nature of built space? It subsequently became associated with technique applied to clearly defined research questions. The shift is evident in the difference between *The Social Logic of Space*, by Bill Hillier and Julienne Hanson, published in 1984 and *Space is the Machine*, by Hillier, published in 1996. The former title can surely be read as a firm negative: “*Not a Sociology of Space*”. The book asserts that space functions socially based on an intrinsic logic, hence the problem of description and conceptualization: rather than take space for granted and look towards sociology to import “ready made” concepts for judging space, one would re-construct the most fundamental operations and relationships that give rise to spatial pattern in human societies, for example the way in which spatial boundaries correspond to social distinctions, the manner in which spatial connections are used to control the interaction of different groups, or the difference ways in which complex structures arise from processes of aggregation of relatively independent units. The aim is to describe space as already social and postulate that society could be reciprocally described as already spatial. The latter title arrests attention for being so aptly provocative. If *the syntax of space is the machine*, how wonderfully must mechanism have metamorphosed from the idea of physical transfer of motion to the idea of a socially intelligible setting! With that, we get the implied promise that we can model with technical precision how abstract relations (syntax) take over a seemingly neutral receptacle (space) and imbue it with function. If modernism held the machine as metaphor for a new aesthetic, Hillier would dare us to invert the analogy and propose a configurational model of space and society as a metaphor for a new idea of mechanism.

A second shift is, alas, much less visible in print. By the late 1980s, the link between description and conceptualization was firmly developing in a parallel field, over design proposals rather than research propositions, as space syntax got a voice around the design table and as, at UCL, the Unit for Advanced Architectural Studies mutated into the Space Syntax Laboratory and Space Syntax Limited, now directed by Tim Stonor. The story of how analytical descriptions have interacted with design diagrams, design ideas and design

conceptualizations has yet to be told and be opened to academic discussion and criticism. We have Sir Norman Foster's generous words in the opening address to the 1st Space Syntax International Symposium to set the agenda: he stated that the techniques of syntax "are, in a way, experiments in the interaction between those two opposite worlds", "of analysis, of observation, of reason, of research" and "of passion, feeling, intuition, imprecision and the hunch".

The spatial logic of movement and its corollaries

According to the most frequently scrutinized and empirically tested theorem of space syntax, more integrated spaces are statistically associated with higher densities of movement. The correlation is not a mathematical artifact: It does not hold when we simulate random patterns of movement within spatial systems. It is robust. It arises in cities without taking into account densities of development and patterns of land use; it also arises in buildings without taking into account routine sequences of activities and functional programs. The relationship between human collectives and space is mediated through the device which enables us to overcome the discreteness of bodies as well as of places: the morphology of movement. The practical corollaries are evident. Space syntax is used to predict the likely consequences of layouts regarding the flows of pedestrian and even, based on more recent extensions of the theorem, vehicular traffic. It serves to evaluate the suitability of locations for land uses which are dependent upon exposure to passing flows, as retail typically is. Syntactic analysis helps formulate alternative scenarios to fit development sites into their surroundings; quite critically, this takes into account the manner in which the local layout of a site will affect the larger patterns of connections of environment. In essence, the link between the morphologies of layouts and movement patterns is the underlying foundation of spatial economy – the lawfulness and the constraints that apply to running human affairs in layouts built with a definite morphological structure. In principle, what space syntax adds to more traditional models of location, distribution and circulation is sensitivity to physical configuration on the ground. At the risk of both simplifying and overstating, we might say that syntax does not only ask whether a connection is available and what the capacity of the connection might be, but also what is the shape of the route, how at every step, it intersects all other potential routes, how it features within the global pattern of the spatial fabric, how it is spatially defined along the way, how it acts as an interface to local conditions. The enhancement of descriptive tools consistent with these aims is the normal agenda of methodologically aimed syntactic research.

The link to movement, and through this to the spatial economy of space use and occupation, provides the entry point for asking theoretical questions about spatial form. How do different principles of layout affect, distort, strengthen or weaken the underlying correlation? What are the pertinent invariants and the critical differences between layout types? How far are social and cultural differences mapped in morphologies of movement? More importantly, since the pattern of movement is oriented to the properties of spatial systems considered as wholes of differentiated parts, how can we account for the emergence of overall structure through local and often disjoint processes of development? Potentially, these questions provide a link between space syntax, architectural research, urban modeling, geography and urban history.

Morphologies of co-presence and encounter

The allusion to language implicit in the terms “space syntax” also serves as a reference to potential speech, and thereby as a link between space and human face. The theorem associating movement with integration was originally presented neither as a contribution to studies of traffic or circulation, nor as a contribution to studies of access to markets. Rather, movement was of interest because of its immediate social by-product: encounter. The idea of encounter conjoins space, bodies, movement and potential face to face communication. To look at layouts with the question of potential encounter in mind requires that they be conceptualized as interfaces.

Buildings accommodate encounter by providing spaces in which people spend time and meet. A critical distinction must be drawn, however, between meetings that are formally scheduled or deliberately decided and meetings which arise as by products of co-presence. The former are merely accommodated, in more or less appropriate settings. The latter, are quite significantly generated from space. Space syntax has been used to systematically study the morphology of the second, more probabilistic set of weakly programmed, informal, serendipitous encounters. Of course, spatial layouts do not determine whether people will interact, even less the content or relevance of their interaction. They play a much stronger role in determining whether people are available as resources to be noticed, observed, approached or addressed by other people. This mostly occurs through the way in which space modulates and distributes boundaries, visual fields and volumes of movement. Movement, however, is the main means for expanding the spatial range available to the human body. Hence, it is argued that the potential socially generative effect of layout is to sustain fields of co-presence and co-awareness as by products of movement. The syntactic description of layouts examines which spatial properties are associated with the intensification or dissipation, global projection or local containment, separation or overlapping of these fields. Hence the relationship between layouts, social power and control. Power and control are almost invariably manifested in practices and designs aimed at the orientation, containment, reduction or elimination of these fields. The pertinent syntactic concept, from this point of view, is interface. Interface, quite clearly, is about the common ground between distinct areas, activities, roles, groups or conditions. In a subtle manner, the theory of space syntax suggests that interface is also about the structure of experience over the “through” portion of any movement that occurs from an origin to a destination. By implication, the idea of interface acquires a global, distributed and temporal dimension. With this comes an assertion that interfaces and domains of co-presence and co-awareness are, in themselves, a background social resource of some importance. Spatial culture can be defined in terms of how intense or dissipated such spatially sustained domains and interfaces are, how they become invested, claimed, qualified, contested or challenged by social practices and discourses, and above all, what characteristic forms they assume and what underlying purposes they serve.

The possibility of search and the intelligibility of settings

Surely the pertinent fact about human space is not that it is complex but rather that it can be comprehended with relative efficiency and ease. Had this not been the case, the very idea of open ended, or relatively open ended search, as when travelers explore towns, visitors museums, potential customers markets, new students campuses, would be an absurdity. The fact that we understand spatial patterns is as surprising as the fact that we understand language, hence the recurrent traffic in analogies and metaphors between the two. Here, the reference to

search as a possible activity is intended as a complement to the emphasis on wayfinding that is more common in the literature on environment and behavior. As used in the literature, wayfinding usually implies a clearly established target destination; the problem is to establish a connection between the present position and that destination, based on knowledge of environment. Open search rather implies exploration which is more weakly directed to any specific target. As indicated by the examples above, search does not necessarily imply lack of familiarity with environment. We as typically perform searches in familiar environments as we explore new and unfamiliar ones. Open search, however, always proceeds from a knowledge of paths, firmly established or provisionally constructed, to an identification of potential target destinations. The expression “directed search” may serve better than the term “wayfinding” to describe the alternative to open search, and thus to help us capture the nuances of exploratory spatial behavior. Directed search proceeds from deciding a destination to the derivation of a path.

To deal with either wayfinding or search, in the sense defined here, we need to draw a distinction between the pattern of navigation and the intelligibility of the structure of environment as a whole. A continuous meandering path may ultimately lead us to a destination, but it may also cause us to lose orientation within the broader setting. Conversely, a clearly comprehended urban grid may impose a complicated pattern of search if the address of a target destination is not known. Space syntax, with its emphasis on the overall structure of connections of environment, has naturally tended to look at patterns of search, open or directed, from the point of view of intelligibility of environment. The relation between the intelligibility of environment and the potential performance of open or directed search can be studied in different ways. Positively speaking we may ask whether spaces with certain properties feature more prominently in the cognitive maps of environment, the standard question in much of the literature. Alternatively we may ask how people err, and whether there is systematic bias to error when the instrumental knowledge of environment is incomplete. This would allow us to infer how intuitions of configuration support the construction of navigational knowledge. An expanding body of syntactic studies shows that patterns of open-ended search gravitate towards more integrated spaces. Patterns of directed search, or wayfinding, also err towards integrated spaces when subjects are unsure of the configuration of environment and the location of the target destination. Finally, more integrated spaces feature more consistently in maps of environment drawn or described by subjects. Thus, the processes of learning new environments, and of developing specific and instrumental navigational skills within more familiar environments, seem anchored upon the same configurational properties of layouts as the processes of everyday space use. The intelligibility and functionality of layouts are closely interconnected. At the same time research findings challenge us to explore whether and how, depending on the objective correlation between local and global properties of connection, a workable intuition of overall spatial structure can develop quite fast. In complex but not very large building settings there are indications that a sense of the pattern of integration, not merely the pattern of connectivity, develops within time intervals shorter than 15 minutes. This suggests a very compressed process of knowledge acquisition.

Configurational consistent patterns of labeling

The labels that we use to describe built spaces (such as “conference room” or “dining room”) encode information about the way in which buildings are inhabited; they denote some of the categories of behavior or function as well as some of the social conventions and sanctions that apply to space use. However, the labels do not directly describe the configuration of space. If spatial configuration itself is an important dimension of social life we may ask whether relatively typical labels get assigned to different positions in a layout so as to sustain typical spatial relationships. Syntactic studies often look at the position of labeled spaces within the graph that represents spatial relationships in a building. Where labeled spaces are similarly ranked with regard to syntactic measures, in each of a sample of buildings, a genotype is said to exist. The inscription of labels into consistent configurational relationships is a means for their social reproduction. Through the configurationally stable patterns of space allocation and labeling buildings encode social knowledge. From a design point of view this is rather important. The design charge is often presented as an inventory of spaces with limited specifications of relationships. It is important to know whether the list of spaces implicitly carries configurational information.

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There are function-specific labels, such as a dining room or a kitchen in a house, a waiting room or an examination room in a hospital, but also generic labels, for example “spaces for inhabitants” and “spaces for visitors”, “private spaces” and “shared spaces”. Both have been subject to syntactic analysis. Focussing on generic labels, however, affords broad comparisons between buildings. Inhabitants are defined as the people who not only have rights over access but are also in command of the social knowledge deployed in space use: doctors in a hospital, directors and actors in a theater. Visitors are those who have provisional rights over space use and are subject to the knowledge deployed: patients in a hospital, patrons in a theater. Such social statuses, or roles, can be distinguished by unequal rights of access whereby spaces deeper in a building are unavailable to some groups. They can also be distinguished by means of differentiated access, whereby different groups use parallel circulation systems to reach the same spaces. In many buildings, the circulation system is treated as a relatively anonymous and shared domain that links more the spaces allocated to more specific activities and functions. In the buildings associated with strong regimes of discipline and control, however, the right to freely use circulation spaces is a special privilege of some groups, while other groups are subjected to confinement. Thus, modes of labeling interact with patterns of movement, co-presence and potential encounter. Labels, as well as boundaries are devices for regulating these patterns. The manner in which such social categories, roles and statuses become spatialized offers insight into the social and programmatic aspects of architecture. The interaction between morphologies of layout and modalities of labeling offers a powerful way into the study of the evolution of building types. They concretize the interaction between program and form, as shown so well by Tom Markus in *Buildings and Power*. Furthermore, modeling the interaction between morphology, labeling and potential encounter interfaces, serves as the bridge to the work of Basil Bernstein: he has been a friend of the early conceptualizations of space syntax, a familiar other person to whom one talked. And underlying the talk and the diagramming of ideas there has always been a shared concern: to show how abstract social structures are reproduced through concrete constructs and behaviors.

Sections and plans

The laws of the field, social agency and the reasons of design

The identification of some of the regular phenomena outlined above, especially those regarding the association between the morphologies of space and movement, has shifted the research problem definitions. To simplify, the question “what is there to be described?” has led to the question “how do descriptive regularities arise?” Hillier has outlined this shift since *Space is the Machine* and has pursued the new question vigorously, in the intervening symposia as well as his first invited paper here. In essence we have come full circle to the definition of morphology as the study of the principles and constraints that govern possibility, except that we come to that question having first specified what the significant patterns that require explanation are. The thrust of Hillier’s approach is to ask how do global regular patterns arise from more localized process. This is consistent with the thesis introduced in the *Social Logic of Space*, that in trying to explain either spatial or social pattern we have to offer an account of its emergence. To use the earlier terminology that serves rather well for the purpose, we have to understand: 1) the creation of pattern based on relatively simple generative rules; 2) the emergence of pattern properties which arise as these rules interact with the laws of formal possibility and constraint, essentially with mathematical necessity; 3) a process of description retrieval whereby the emergent regularities are recognized; and 4) an application of new generative rules informed by description retrieval. In short, we are looking for a theory of how complex structures can emerge through distributed processes associated with growth. What we mean by distributed process is one involving largely independent spatial actions, coordinated through adherence to parsimonious rules, but leading to emergent complex and coherent patterns that both enable and constrain the reproduction of the society that activates the process in the first place. The developments of descriptive theory have led to quite a few specific formulations of questions around this common central theme: how do rules regarding the dense aggregation of build units lead the emergence of a intersecting linear segments of space for movement? How do geometric properties such as line length or angle of intersection interact with the emerging syntactic patterns of connectivity and integration? How does a locally deformed overall urban grid arise? How can we account for the radial structures that have typically been noticed in the spatial analysis of urban systems within the theory of space syntax? Based on these questions, how can we distinguish between common evolutionary principles and the differentiating evolutionary paths that characterize different societies and spatial cultures?

These are fundamental questions for any theory of space as a social artifact, perhaps they are the fundamental questions. As the research agenda they imply is pursued, so a complementary agenda also suggests itself. Modeling the interaction between distributed process and formal necessity must be complemented by modeling the constitution of space through intentional design and the application of instruments of social regulation, from property lines to street standards, from building regulations to masterplans. Quite naturally, the original framework proposed in the *Social Logic of Space* places quite some emphasis on the way in which design imposes descriptions over processes of spatial growth and change. More importantly, the imposition of descriptions is linked to the emergence, evolution and role of government. Yet, much of the applied literature of space syntax demonstrates a preference for the question how spatial patterns emerge over and above design intentionality and social agency. Space is always treated as social. But, it is not always treated as political. One has to go to older work, often unpublished, to be reminded that the interaction between regulatory

frameworks and design ideas has always been at the background of theorizing about the social logic of space at the Unit for Architectural Studies. The work of Rob Sprunt (“Building Knowledge and Building Law” *JAR* 4/3, 1975), Kevin Jenden, Dave Bixby comes to mind. To put the same point more naively, the material that typically illustrates the literature of urban and architectural history and criticism, from baroque urban planning to modern projects of urban interventions is often missing from the visual archive of space syntax, the main books and the symposia proceedings for example. The discussion of intentional design, where it becomes the main subject of systematic inquiry, is often linked to an analysis of pathology. This is historically quite understandable. In its earlier inceptions in the 1970s, space syntax was, to some extent, a response to the problem of whether the social failures associated with modernism could be attributed to spatial design, possibly to design error, rather than to social challenge alone. Since then, understanding failure has been a recurrent theme. Yet, a theory of morphological principles has to engage design intention, political purpose and social agency more broadly than that, as part of the fundamental social constitution of space. There have of course been quite some exemplary systematic studies of designed space at the urban level. Julianne Hanson has offered thorough discussions of how design and planning intentions and ideas have interacted with the evolutionary emergence of spatial structure in the case of London. Frederico de Holanda has offered exemplary studies of the designed modern settlement par excellence, Brasilia. His is perhaps the most heroic application of space syntax to understand in historic, social and political detail the creation and function of a designed city; also, to construct an appropriate comparative framework, based on a very ambitious review of anthropological and historical literature, within which circumstantial factors could be distinguished from underlying principles. How long before such work is more broadly available in print so that it can be repeated elsewhere? There have also been numerous studies tracking the consequences arising from the implementation of design and regulatory frameworks in Sweden. More than that, there is of course the enviable record and portfolio of a research methodology systematically interacting with current urban design practice through Space Syntax Limited. Such studies can claim center stage as fundamental syntactic theory addresses not only how complex spatial regularities emerge, but also how they are constituted, accelerated, contested, or reversed through political regulation and design intentionality. In the simplest terms, this may imply taking regulatory frameworks and development practices over time as starting premises for modeling spatial evolution and the emergence of spatial structure. The theory of distributed process can provide the necessary foundation to bring these questions into sharper focus, in essence to re-write some of the social history of urban form.

Design charge and design choice

A significant contribution of morphological research to professional knowledge is through the retrospective or prospective formulation of the basic choices available in design, over a given kind of problem and at any given point in time. That form is under-specified by the design charge is commonplace. How then can research contribute to the earlier and more intuitive stages of emergence of design proposals? Between the explicit or implicit prescription stated in the charge and the design idea contributed by the designer, there is always an area of significant and broadly available choice. Since Frank Duffy’s pioneering Ph.D. thesis in the 1970s, identifying the spatial choices available and testing the assumptions that govern them has not always been high on the agenda of architectural research. For example, to take

the cue from Duffy, what are the significantly different kinds of work environments today, how have they evolved, what are the appropriate models for evaluating them and in what directions should present choices be expanded? Such questions have been consistently asked within the literature of space syntax. The search for underlying pattern and the orientation towards fundamental principles, however, has occasionally prevailed at their expense. In the fields of urban design and housing, syntactic research has led to clear articulations of recurrent design dilemmas and clear models to support design decisions. Perhaps there now is scope for similar contributions in fields such as the environments for work, exhibition, trade, performance, care, or education that have also invited syntactic analysis.

In such work a tension between analytic argument and synthetic formulation must be confronted. Analytical research is naturally inclined towards the laws that govern a particular aspect of the object. As a result, it is easier to apply it to the evaluation of design proposals from specialized points of view. The correspondingly specific design choices are likely to be applicable to the adjustment, not to the generation of designs. In order to arrive at more holistic statements regarding design alternatives it is necessary to already think as a designer, to posit in order to question. Holistic statements, however, inherently tend towards typing, at worst towards stereotyping, as a shorthand for summarizing complexity. If, following Phil Steadman's book *Architectural Morphology*, we define morphology as the study of the principles that govern formal possibility, then morphology is opposed to typology. Framing design choices in terms of type requires our suspending our awareness that the significant properties of designs do not necessarily co-vary. If they did, then holistic design alternatives would be specified with increasing rigor in step with the advance of knowledge. On the other hand, the culturally shared awareness of precedent tends to crystallize into typologies, whether by function, style, construction, programmatic purpose or other criterion. The deeper tension between morphology and typology can only be resolved by accepting that it is the function of morphology to continuously reconstruct typology. But reconstructing, however provisionally, is not equivalent to dismissing. Noting, mapping, evaluating and perhaps recasting underlying design choices has to be a part of an activist research culture.

Architectural interest

Architectural interest is more specific than a general interest in built form and its functions. Architectural interest is defined through the practice and criticism of architectural design. Quite naturally the question "what are the properties of spatial form that carry socially significant function" is more circumscribed than the question "what are the properties of form that can invite interest", even if it is also more fundamental. A critical framework founded on a theory of social function may assume normative priority or carry great consequence, but it certainly does not cover the field of architectural criticism. How has and how could space syntax interact with architectural criticism? There are, perhaps, three meeting grounds of interest. First, space syntax can provide specialized input into design formulation and design evaluation. This is a familiar possibility and for many a familiar practice. Second, space syntax can contribute to the enhancement of our intuitions of what properties of form are potentially intelligible, and can potentially be treated as the conceptual canvas of design. Briefly, how can analytic descriptions inform synthetic intuitions? As mentioned above, the dispersed experience and evidence linked to this question has not systematically found its way into the literature. There is a third potential interface which seems easier to specify. How do the formal principles applied in the design process interact with the emergent spatial properties of

designed objects? Dealing with this question implies a greater interest in modeling those principles in the first place. To analyze samples of buildings based on a common denominator, such as the functional syntax of space is an adequate basis for specialized criticism, but not a sufficient basis for interacting with the design imagination. Interaction with the design imagination implies engaging the generative operations that give rise to design. This represents a potential interface between space syntax and alternative morphological approaches that help us to model generative design formalisms, and to analyze the architectonics of built form, including of course “shape grammars”. It is perhaps appropriate that a clearer dialogue between the syntax of space and the languages of design be established. Chapters in Julianne Hanson’s *Decoding Homes and Houses* surely lean in this direction.

Spatial cognition and intelligibility

The coming into focus of the question of intelligibility, from the instrumental point of view of search and wayfinding, has been briefly described earlier. As space syntax helps to map and to interpret the behaviors associated with navigation in spatial environments, how could we study the link between spatial cognition and spatial performance? How would our descriptions of built space be enriched or modified based on insights generated in studies of cognition? How far can we draw conclusions about human patterns of exploration and search by comparison to computational search models and simulated environments? These are all questions that have a direct bearing on research agendas already under way. There are also broader questions in the background. Spatial knowledge is fundamental to human understanding. Familiar discussions about how spatial ideas become embedded in language are currently complemented by renewed interest in the role of spatial concepts as a foundation for more abstract forms of reasoning and conceptualizing. If spatial patterns are constitutive of our underlying cognitive models and patterns of experience, how could our analyses of the built environment approach the larger question of how the world becomes intelligible to us, not only instrumentally, but also cognitively and experientially? There are obvious connections between this question and approaches to design which aim at architecture as a symbolic system, that is as an expression of ideas about the structure of the world over and above the practical arrangement of space. The link between intelligibility as a practical matter of orientation, search and wayfinding, and intelligibility as a way of thinking that projects from embodied experience to symbolic form has not traditionally been a concern in quantitative syntactic analysis. Yet, space syntax is founded on the idea that architecture is a morphic language, that meaning, not just behavioral support and behavioral constraint, is constituted through the relational patterns built into the built environment. It would seem that the idea of a morphic language can be extended in the direction of a broader theory of how built form is intelligible as a symbolic system. If this not where syntactic ideas might meet with the work of Robin Evans (another familiar friend around seminars in the past) on the relationship between geometry, conceptualization and the projection of symbolic meanings onto form? From the vantage point of space syntax one anticipates in advance that what is produced in space always exceeds what is being mapped. One more reason to broach the larger question.

Multiple spatialities: How does built space feature on the map?

The Social Logic of Space takes the rather critical step of treating the non-correspondence of socially and spatially defined groups as a normal condition with specific morphological correlates. It is proposed, based on anthropological and sociological literature, that non-corre-

spondence works like a social insurance policy, whereby the strengths deriving from affiliation to social groups are complemented by the strengths derived from affiliation to spatial groups. Then it is suggested that the morphological correlate of non-correspondence is dense, integrated space which facilitates the mixing of social categories. This possible model of space occupation is contrasted to correspondence models whereby social and spatial groups coincide as society becomes territorially organized. The morphological correlates of correspondence are hierarchical spatial models working to enforce boundaries rather than to create connections. This theoretical framework, founded in the ideas of Durkheim, is then expanded to include a distinction between differential solidarity and spatial class difference – an itself this was a rather unusual and productive way to inflect the relationship between Durkheim and the marxian tradition. Differential solidarity arises when different groups sustain patterns of encounter and interaction by using different potentialities of a complex spatial system. For example, students at a university may sustain their social cohesion through unprogrammed encounters in shared work spaces, informal meeting areas, and libraries; faculty may sustain their cohesion based on formal meetings and schedules, mostly in privately controlled spaces. Spatial class difference arises when the spatial basis that supports the cohesion of one group is designed into a system at the expense of the spatial requirements associated with the cohesion of another group. The elimination of street cultures through free standing high rise forms of housing would a typical example. An extreme form of spatial class difference is disarrangement, the creation of conditions where members of the population cannot sustain any viable pattern of encounter based on physical space. This three dimensional theoretical framework seems to have been rich enough to allow characterizations of social and spatial contexts as different as, say, London and Brasilia, to mention the host cities of the first two space syntax symposia. There is no reason to expect that the framework would not cope as well with a characterization of the dilemmas of spatial growth and identity confronted in Atlanta. The framework is solid provided we remain focussed upon the logic of built space measured against the logic of embodied co-awareness and face to face potential encounter.

What about *The City of Bits*? What about the redefinitions of spatiality that occur with the expansion of communication infrastructure and the emergence of virtual space? What about the media that continue to contest the primacy of built space as the dominant field of co-awareness, co-presence and encounter? Quite possibly, one could deal with new questions in the existing framework. As the forces of technology and economy affect the potential clustering or dispersion of society, so the functions of space get re-adjusted. In the 19th century the increasingly dense and large city presented a challenge that had to be handled with new kinds of spatial design, aimed, at least in part, at separation, ordering and classification. Is it not natural that the new forces of technology and economy are now defining new challenges? First, how to rethink the value of place, how to re-spatialize society. Then how to handle placelessness, the frequently vast buildings that serve an increasingly mobile clientele or even a clientele that never visits them physically, and the environments they give rise to. Persistent paradoxes, such as the increasing association between physical patterns that ensure global connection at the cost of local disconnection would be associated with these new challenges. What are the forms of physical spatialization that will correspond to globally constituted patterns of identity, communication and exchange? Yet, even if we were able to offer some account of present conditions consistent with existing theoretical foundations,

this would not entirely resolve the issue. We can still wonder how significant the role of built space is in the current situation and in what its significance lies. The underlying conceptual models may stand, but we still have to ask what specific stories they can tell and how these stories interact with other stories. This is certainly a theme open to further discussion.

Event

Naturally, this preface was written with one leg in the field of “space syntax” and the other leg in the culture of the Ph.D. program at the College of Architecture at Georgia Tech. Space syntax, as a technique, but also as an ethos of architectural research, has perhaps contributed a noticeable part to the descriptive precision, the love of the object, that often characterizes the rather diverse work produced in our program. Ph.D. theses overtly linked to space syntax have covered a variety of research themes; they have been supervised by many members of the faculty in architecture, urban design and planning, theory, history, environment and behavior, including Doug Allen, Larry Keating, Ronald Lewcock, Jean Wineman, Craig Zimring, and myself; and they have been examined by a variety of external examiners including Nezar AlSayyad, Michael Baxandall, Reginald Golledge, Julianne Hanson, Bill Hillier, Kenneth Knoespel, Lionel March, Richard Martin, Alan Penn, Anthony Vidler, Thomas Schumacher, Philip Steadman. Remembering themes rather than titles, we have: patterns of display and interfaces of exhibition exploration (Yoon Kyung Choi, 1991); transformations of domestic space and dilemmas of tradition versus modernization (Yaldiz Yehya Eid, 1993); zoo design (Uriel Abraham Levi, 1993); the spatial dimensions of control in restricted settings (Frieda Peatross, 1994); the historic evolution of different urban morphologies and their effect upon the balance between vehicular and pedestrian movement (Seung Koo Jo, 1996); formal foundations for extending syntactic methodologies (Mahbub Rashid, 1998); spatial dimensions of vulnerability to crime in low density urban environments (Ameen Farooq, 1999); spatial structure, intelligibility and the patterns of search associated with shopping in traditional urban environments (Abdulgader Amir, 1998); spatial intelligibility and cognition (Saif ul-Haq, 2001); the logic of design innovation and the interaction between design charge and design choice (Sonit Bafna, 2001). In addition, there have been theses that have carried the mood to other fields, not yet amenable to similar quantification: spatial dimensions of culture, identity and symbolism (Lucas Sentosa, 1994); spatial dimensions of metaphor (Sung Hong Kim, 1995); translations between text and space (Aarati Kanekar, 2000). The symposium is hosted at a site that bears the marks of their commitment, intuitions, and insights. It is a great working party, and it is fun. With Thanos Economou more closely involved, and benefiting from interactions with design computing led by Chuck Eastman, morphological research at Georgia Tech is likely to grow in richer directions in the near future. It is also likely to benefit from continuing and expanding systematic interactions with other academic and research institutions including the vibrant and populous team at University College London, and the research team led by Bjorn Klarqvist at the Chalmers University of Technology, as well as by new links such as we anticipate with the Taubman College of Architecture and Urban Planning at the University of Michigan.

The issue then, ahead of the symposium, is not whether the field sketched here is new. It is rather familiar, and hence the rough sketch can perhaps be easily recognized. Rather, the issue is whether questions that have been formulated in many places and many frames of thought are interestingly transformed, extended, displaced and perhaps at times answered, when looked through the lens of a particular research paradigm, space syntax. Conversely, the

issue is whether the community associated with space syntax can interact with, absorb and transform into programs of architectural research questions about space that originate elsewhere. When do methods and concepts of inquiry intersect? One cannot prefigure an event, only prepare it. It is in the nature of these working notes that they will probably look awkwardly outdated a few weeks from now. The symposium is aimed at better ways of asking questions, at formulating new propositions to be tested and new intuitions to talk about. Above all else, however, a symposium is about comparing notes and taking notes, hopefully a compressed and intensified generative use of space – we will make every effort to promote integration, if possible there will be no parallel sessions, so that this symposium, like its predecessors, provides the space syntax community with an opportunity to report and examine work in progress. It has been very rewarding to see the number, variety of topics and quality of the papers submitted to the symposium. It has also been extremely flattering, and challenging, that the distinguished invited speakers have joined in making this volume of proceedings so much richer. It is even better that they have agreed to come, so that one can put a face to books and papers one has been reading, in some cases over many years, and see how questions are transformed by encounters.

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