JULIAN BEINART: I've handed out a guide to what we're going to cover today. Now, I don't know how familiar you are with the material. Does anybody, for instance, have any familiarity with what is called space syntax? How much familiarity?

STUDENT: I saw a presentation that someone who is working in England on space syntax gave to the National Capital Park and Planning Commission in DC.

JULIAN BEINART: And?

STUDENT: It was pretty interesting.

JULIAN BEINART: When was this, recently? Or--

STUDENT: Yeah, 2011 I think.

JULIAN BEINART: Do the book *Space is a Machine?*

STUDENT: No. Is that what the reading was from?

JULIAN BEINART: No, this is a voluminous document. It costs a lot of money to buy.

STUDENT: [LAUGHS]

JULIAN BEINART: Ah. It really is more of an expansion of the space syntax methodology and the idea than we have time for in this class. That's why I ask if anybody is familiar with it. OK. This is the last class in the first section. And we're concentrated again, very, very briefly, as we did on Tuesday, with theories which seem to be determined by the logic from social science.

There are microtheories within each of these, lots of rules of thumb, lots of understanding which is not externalized theoretically. For instance, one of my favorites is Fifth Avenue and Park Avenue. A section through a building on Fifth Avenue, a section of a building on Park Avenue.

On Fifth Avenue, the ground is significant. Everything that is built is connected to the ground by mechanical systems, generally an escalator for five or six floors. The basement is important because it's linked to a surface only one floor from the ground. Two buildings on Park Avenue which you know, Lever Brothers and Seagram's building. Lever Brothers gives up the ground for nothing. The ground is worthless.

Seagram's building extends a plaza, in return for which it gets more bulk to build taller. The role of the ground in these two cases are the subject of an economic theory, which is just the rule of thumb. It's observed. I don't know of a rule of-- it's much like, well, other rules of thumb in our business.

In fact, it's curious. In a discipline such as architecture, there are very few theoretical texts. There used to be theoretical texts. How do you learn architecture? Have you got a textbook? You can't learn science without a textbook. A textbook is the agreed-upon synthesized material which you need to know.

I make this preface because some of the theoretical propositions we will look at today suffer from the same difficulty. But they, unlike the series which we looked at on Tuesday, where space was either neutral, or costly, or friction-producing, or a measure for recording a distribution of some process-- most of what we feel to be true and experience with the city is lost. None of the social science theories-- with the exception, perhaps, of the first one, which we discussed-- has any connection to valuing the built environment as something in itself.

Kevin Lynch is the first of the protagonists of a theory which deals with equality of the built environment en masse, not a single building, but a system of buildings. Lynch starts his work-- there's an of Lynch's work at MIT just down the corridor. If you have time one day and you have nothing else to do, look at his notebook on his first visit to Italy when he was a young professor here at MIT.

He does a detailed drawing of the path system linking the major squares and piazza, the piazza and churches, beautifully drawn. At the end of his four or five days in Florence, he writes a note. Why did I not ask the people what they do on Saturday nights? What about the activity in this town? Why don't I take that into account? Then he leaves Florence.

His preoccupation with trying to understand the spatial pattern of cities through asking people is evident in his first book, *The Image of the City.* What is the image of the city? The image of the city is made up of three items. What are the three? You've read the book, I presume. What are the three?

STUDENT: There's the experiment where they ask people on the street.

JULIAN BEINART: Yes, and I didn't ask you for ho the study was done. I asked you, what are the three abstract components? I'll tell you-- identity, structure, and meaning. That equals image. And you find this out by cognitive mapping, by asking people how they find their way around cities-- Los Angeles, New York, Boston, and so on.

What Lynch could not do in that study was deal with meaning. It's significant that the power that *The Image of the City* book had escapes the one component which bedevils us in our valuation of much of the built environment, and that's meaning. Kevin apologized twice in different publications for his inability to deal with meaning. I say that as a beginning to a discussion of his work.

When, in this class, we asked people, when he was teaching here with me, what they remembered of the book, they would say landmarks, Z, Z, Z, a set of alphabetical items. And then says, that's not what I wrote the book for. I wrote the book to make it clear that if you want to know something about a city, you have to ask the people who live in it, not take formulaic generalizations.

Of course, he was being a bit harsh on himself. But his last book-- I must say, one of the things about all the theories that I'll be discussing today is that they've published the ideas. They're not hermeneutic. They're not hermetic. They're not sealed off from examination.

In architecture, so much of knowledge is internalized. Your sensibility to patterns is built up through much of the practice of priesthood. Lynch and the others today-- by the way, the others today will be in order-- Kevin Lynch, Christopher Alexander, John Habraken, space syntax. And then last, we'll look at the work of the British Land Use and Built Form group in Cambridge, England, Lionel March. Sir Lionel March. Oh, no, and he wasn't knighted. Sorry just Lionel March.

For Lynch, the problem remains that-- let me see if I can find a phrase. No, there isn't one phrase that I can find which sums up his search. What I'll do with him is go through the performance of dimension theory, which is the last one, which he built up in this class and which is published in a book which was called *A Theory of Good City Form* and then appeared late as *Good City Form,* and use that as-- and then I will compare that with his writings on a utopian speculation that he made, just to give some embodiment to his ideas.

Some generalizations-- unlike Christopher Alexander and John Habraken, Lynch's work is not a critique of contemporary urbanism. His philosophy is in relation to present-day city and time. He is completely interested in the complexity and difficulty we have understanding of the form of a city. He believes there are ranges of understanding, not standards. His theory, performance dimension, set up ranges within which different cultures could construct their own standards and which the dimensions could be compared one to another and then balanced again two meta-criteria, justice and application.

Lynch's humanism comes from his appreciation of one of the major dimensions of the human system, and that's its capacity to learn. And therefore, his ideal utopia is a manifestation of human beings' ability to change culture and aspirations rather than the manifestation of some iron law. There's no drawing in his utopia. It's partly because of his decision that architecture doesn't help much in understanding urban form.

I recall a disagreement I had in this class with him when I introduced Aldo Rossi's book, which was new at the time. And Lynch was very angry. And he writes about the denouncement of Aldo Rossi. I tried to argue that there was some merit in Rossi's speculation as an architect and so on. I don't understand why Lynch disparaged architecture as such.

He didn't disparage architecture as a discipline. He disparaged the method in which architects took upon themselves the right to invent spatial ideas on their own-- again, without consultation. Lynch was so aghast at the idea of an imperial rulership of knowledge and hesitated every time to embrace something unless it had been acknowledged by human experience.

Many of these people whose theories I talking about today are very much rooted in observing existing patterns and building on them. They differ in respect to the way in which they observe these patterns, what they make of them. I will show you that in Christopher Alexander's pattern language, he makes absolutely derivations from his observation of human behavior. John Habraken never makes a categorical, good or bad. John Habraken believes that all agreements are good because they are saturated with information from culture and so on.

Lynch wishes to build a model for the world as if urbanism was at the beginning of its trajectory. He believes that, in the model of science, that science started from nowhere. It kept on repeating experiments, developing new and new identity, and new and new ideology, and reaching a point where it was much more sophisticated than where it began. So he starts off by setting out the dimensions that you had to take.

This is Kepler looking at this, trying to derive a theory of the Earth's movement. Lynch is trying to set forth, what are the things that you have to take into account and measure in order to have a comprehensive view of a city independent of which place in the world it is, independent of which culture? He experiments with these and has a set of ideas which he writes about which set up the prologue to these ideas. I gave you, in the handout today, one of these subideas. It was the notion of adaptability.

Again, adaptability would interest Lynch because it is the capacity of the human being to change patterns after learning. Adaptability in our class discussion was a separate item. It became, in the book, a subset of the item fit. I gave you this piece on adaptability as an example of how he would ask you to develop it. He said-- let me find an example of what I gave to you today.

He tries to break down adaptability into subcategories. Manipulability, which is different from reversibility. What is resilience? What is the innovativeness? I then added-- in your thing, I've given you some handwritten response from Lynch, not because that you should read it, but here is an idea. He writes this piece on adaptability. See, it's circulated. Somebody, an economist, sends back a review of his ideas. And then he replies to the economist. This is a handwritten reply to a colleague.

His imagination is that if we each, all the students of urbanism, took on the task of identifying in specific terms what these categories of inevitability, we would have a basis for a specific culture settling an item of reversibility in specific terms. Standards would imply that all of them are equal for all cultures. Of course, that's not true. You could have varying standards.

But for Lynch, the idea was that we were in such a rough state, theoretically, that you had to set out these items more systematically. He didn't get very far. He died too young. And if he were here today, he'd add more than I'm able to explain on his behalf.

In his collected works, there's a chapter called "A Place, Utopia". Now, it's interesting that this place, utopia, which is his speculation about what an ideal urban world would look like-- there's no drawing. In *The Image of the City,* he uses little drawings on the side of the text to add information visually. Here, there's no drawing.

I'll just pick out a couple of items from "The Place, Utopia". Has anybody read "A Place, Utopia"? We're not wasting my time, then, or your time. I propose, he says, to leave-- I attempt something more modest here without losing track of society. I propose to leave it unaccounted for except where it springs from some feature of place. Everything about what I'm going to say, he says, is about how people relate to their surroundings, rather than out of a self-absorbed technical fantasy or mechanical consequence of social prescription on the other.

In other words, what he's saying is that there are items which we can learn from simply from the way space is used and manipulated. Imagine an urban countryside, a highly varied but humanized landscape. It is neither urban nor rural in the old sense since houses, workplaces are set among trees, farms, and streams. Within this extensive countryside, there's a network of small, intensive urban centers. The countryside is as functionally intricate and interdependent as any contemporary city.

The land, the space is not allocated to owners. The use of land is brief in the history of cities, so much like we've picked up from other sources. It is better for the land to be in the hands of a trust. He calls them a regional land trust. These tasks grant leases for the present enjoyment of space.

Everyone is trained to read a place just as everyone is trained to read a good book. There are slow places and fast places. I can go through this in some detail. But you can read it yourself. What is significant about it is that he doesn't start off with a definition that a city is anything that cannot be replicated through a mixture of landscape and building.

He doesn't depict the building. He sees, in a trained society, people will pick good buildings. They will make them from good materials. His emphasis is on depicting those spaces in buildings or infrastructure of a city which derive from the goodness of people.

Now, people are not good. They're good and bad. Sometimes they are both. We are all good and bad in our life. There's an element in many of these theorists in depicting a society without political friction, without individual competition. John Habraken's agreements-- he says good agreements will be made independent of whether you're a Marxist or Capitalist. You will have to come to some agreement about where you enter a building, whether there is parking underground, or how many floors of building there are above ground.

Christopher Alexander also bypasses the political impact on his work. He makes decisions about patterns which are not subject to intercourse for producing agreements. These patterns are decided upon through his examination of the nature of order.

Alexander has an interesting trajectory in his work. His first book,*Notes on the Synthesis of*-- I don't know if any of you have paid particular attention to Alexander's work. Has anybody been an Alexander student? No. Christopher Alexander, when I first ran into him was at Harvard. And he had written *Notes on the Synthesis of Form,* which was an admiration and an attempt to understand how a culture, such as that in the Middle East, could make carpets without any explicit instruction as to how to do them, only an oral tradition, handed down, but allowing within that tradition enormous variation in the maintenance of quality.

He looked to computation to enable us to, perhaps, do the same kind of thing. Let's maintain quality, although explicitly unclear about how we were doing it. He's moved through a number of phases in his work. No sooner did he-- been interested in optimization, then he wrote a piece about how to maximize communication, a silly piece in which he argues that in the zoning of suburban housing, the living room should be exposed to the street and curtains would be unnecessary, that people would enjoy partaking in the experience of being a community, a remark which might well apply to New York City but not to an American suburb.

He then published a significant paper called-- "The Structure of a City is Not a Tree." It was more complicated than a tree, didn't have a central trunk with all its branches regularly sprouting from the trunk. But geometrically, he couldn't explain what it was. But he knew it wasn't a tree.

And then-- partly, I think, because of his living on the west coast [CHUCKLES] where, perhaps, the counterculture has spread more ideas in American thought than anywhere else in the world-- he started arguing that there was a microunit which had spatial and social characteristics, what he calls patterns. Each microunit has a pattern. There are good patterns, and there are bad patterns.

He studies a field of spatial and social relations. There are good, living patterns; bad, dead ones. We do not need grand planning or design for the whole town if each thing is made in a context which the other understands. The town emerges by itself and is continually repaired. He believes that society has-- it's a romantic notion-- has a history of patterns which are good patterns. They're good patterns because they're lived in, they're understood. Like Patrick Geddes, he tries-- remember, Patrick Geddes is the plane diagram which emotional, objective, experienced items all can fold into each other.

Here, Alexander is very much again trying to link feeling and thought. A good pattern is one which is objectively correct but is also felt by you to be correct. A good example is in a piece in which he tries to explain to a young architecture student at Berkeley what he's all about.

He says, look at this table. They're sitting in a cafe. He says, look at this table. It's made of wood. There's the difference between making the edge and finishing the edge of the wood with sandpaper, making the minimal transition from one service to another, versus the machine-like one, which our table is, which has just rounded it off in a very blunt, crude way.

He asked the student, which of these two is a representation of your good self? The student doesn't understand what he's talking about. Why should the edge of a table represent your psychological whole? I quote, "but what if I ask you to tell me which of these two tables you're more willing to take as a picture of your own self? Which of the two would you consider a better candidate to picture of your own soul?" And so on-- everything.

The trouble is that it's difficult to write such patterns. We don't have the tools yet. We may one day have them to do that. These patterns which are printed in the book, *A Pattern Language,* on biblical paper is almost a giveaway of a kind. For instance, *Pattern* on page 115-- there's abundant evidence to show that high buildings make people crazy.

Now, objectively, this is not true. There may be reasons why tall buildings are harmful. But it is an abstract pattern or is a theoretical pattern derived from observation. It's not true.

I can quote you from Herbert Gans, a well-known urban sociologist who once taught here at MIT. I quote, "thus, whether housing is high- or low-rise does not, by itself, make much difference." The luxury apartment house has been built in New York City for well over a century now, and no one has yet discovered that the buildings jammed on Park and Fifth Avenues and so forth generate pathology. Conversely, when poor people live in even the best-designed low-rise projects, they still do not escape the problems of poverty.

Gans is correct. Why does Alexander make such a statement? He's too intelligent to know that his statement is incorrect. I don't know. I don't know. There's a kind of insistence that either you, in-- when I learned debating, I was taught that sometimes it's a good idea to throw out a statement, an assumption, a hypothesis just to make the argument more interesting. And if your opponent didn't catch up on the weakness of your argument, you would win.

I don't think Alexander's into debating games. But it's often puzzled me why he took the trouble to assemble often very good ideas, very down-to-earth ideas. He, for instance, says single designers don't really produce comprehensive results. He says, I work in the College of Environmental Design at Berkeley, which was designed by a team of the best highly trained architects in our college. I can't put plants on the sill in my window because nobody ever thought about what the best position of the window would be in the section of the wall.

They pushed the window to the inside to allow a maximum of use on the outside where there's no need for any use. Why do intelligent people make such stupid assumptions? They never consulted us.

Well, if an architect were redesigning MIT's School of Architecture and asked me about my office, I don't know if I would remember to specify that the window needs to be on the outside of the wall to allow me the space on the inside for my plants or for whatever. So his observation is that somehow, the system isn't working. Modern urbanism is a mess. So he proposes a number of rules.

I won't go through the rules. You can see them in his later book,*A New Theory of Urban Design.* There are rules about growing a whole, about piecemeal, unpredictable coherence, full of feeling, no single artist. There are many people involved, the whole idea of a thing having to have feeling. The seven rules-- let me find the one about-- rule number three, visions. Every project must first be experienced and then expressed as a vision which can be seen in the inner eye. I don't know where my inner eye is and how to use it.

AUDIENCE: [LAUGHS]

JULIAN BEINART: It must have this quality so strongly that it can also be communicated to others and felt by others as a vision. At least Alexander is attempting to be explicit about his ideas. Explicitness is an advantage in debate. And explicitness, even if you make mistakes, is better than dull hermiticism. And all of these people are generating explicitness as one of the aspects of their work.

In the handout I gave to you, there's a piece from*A New Theory of Urban Design,* this. On the left is a piece of Rome, a plan of Rome around the Pantheon, medieval Rome, as opposed to an American suburb. What are the characteristics of the world depicted on the left-- a good world, according to Alexander?

The whole is made up of parts which are unique but belong to families of shape. There are churches, which all have open space in front of them-- the Pantheon, and so on, Sant'Ignazio, Sant'Gesú. There are patterns of housing which repeat. There are decisions which are made through piecemeal addition rather than through a ramp in the industrial production.

There's a family of belongingness of all the parts. In a sense-- although I don't know who had the vision which produced this plan, I don't think there was one person, one pope who said Rome would be this way-- but there were patterns, presumably, which people learned from other patterns and decided to reproduce them in a piecemeal way. So building up from experience, building up from categories of knowledge which had already been tested, as opposed to this machine-like production.

Alexander is tough medicine. He can come across as an arrogant fool. He recently produced four volumes called *The Nature of Order.* He's even more explicit. In*The Nature of Order,* I have tried to construct a coherent picture of life on Earth which makes sense of these matters, that gives us something to live for and worth living for. Yes, like Geddes, I am trying, at the same time, to deal with the emotional world and the objective, ordinary world around us.

What is extraordinary is he writes about*A Pattern Language.* By about 1975, these investigations, which I undertook with five colleagues, gave us gold. We discovered about 250 invariant spatial patterns. Each one was associated with the stability of human environmental studies. They were published in *A Pattern Language.* They have become a standard part of what is known and used by architects.

Well, what's this all about? It's not true. So why does a man say something which is not true? It can only be provocative. And perhaps like John McEnroe shouting at an umpire in a tennis game, he had a reason for provoking response, dealing with satisfaction of his inner grief publicly. I can only, without doing a psychoanalysis of this, be surprised by it. The fact is that architects seldom read a book like *Pattern Language.* And they're not in the habit of taking a statement like "tall buildings are a danger to human health" seriously.

One last thing before we move on-- in his latest work, he claims that there are a body of patterns. I'll use his words. The idea of how much life is in things is subjective in the sense of observation. This quality of life seems to be correlated with the repeated appearance of 15 geometric properties. The appearance of living structure in things is also correlated-- so on, and so on.

He's now reduced the complexity to the repetition of 15 patterns. I haven't seen these patterns. I don't know what they are. But the observation that complexity can be reduced to 15 repeated patterns-- they are probably centrally focused. I don't know what they are. He says they are true in art, in urbanism, in everything that speaks of life.

What is it that speaks of life? I understand that walking down the street in Italy, in almost any small Italian town, will resonate a certain quality which evokes being alive. There's energy. There's organization. There's all of the elements that you might encounter, actually or subliminally, which would say this is lively. Versus a shopping center parking lot on Sunday afternoon, at any time of the week, would not evoke that. We can spend a couple of hours starting to write down, what would cause you to experience something as being alive and something which wasn't?

I don't know what to say about the body of work of Alexander. It's going to be a pity that he has spent so much energy and will have such a little observable impact on the way we make buildings and make cities. You are a good test group. Have you been influenced by Christopher Alexander's work? A little bit? A little bit, yeah. I would say the same thing.

John Habraken was head of the Department of Architecture here at MIT for a number of years. When he was in Holland, he wrote a little book called *Supports* in which he argued that there was a distinction between two aspects of building. The one which he called supports was the infrastructure which allowed habitation to take place-- all the pipes, all the structure, all the material. And he separated that from a human capacity-- which, for want of a better word, I think his word was indwelling-- that was the creative capacity that all people had to determine their own microenvironment.

Supports were basic items which enabled individual creativity. When he decided to engage these ideas in a larger world, he came upon the idea that the best way to understand the actions of a city were to understand it is a set of agreements. Agreements are required for the production of any pieces of city. It's, of course, not actually true. But in his view, the agreements between differing parties, surprisingly, could produce environments in which certain aspects were agreed upon and certain aspects were not agreed upon.

It's difficult to understand some of his material. He's written quite widely. His writings include pieces like *The Control of Complexity,* which is in your reading, a number of others. Essentially, his work is best explicated in a piece of work he did here at MIT called *The Grunsfeld Variations.* There's a publication of it available in the MIT publication list-- I don't know where that is-- a piece of work which he did with students. I will use it to explain, perhaps better, what his larger ideas are.

The two diagrams you have in your handout-- the one is a plan of the Grunsfeld variation, which is this. This is a set of redesigned blocks in the Back Bay of Boston. Agreements are reached that there will be high-density but low-rise buildings. Agreement is reached that there will be parking underground. But halfway, there are streets. And the parking will be set in such a way that you can have two kinds of conditions-- a half-parking level, a full-parking level, and variations of the street height.

I'm not sure that I remember what all the other agreements were. He then says we can learn from the tissue of this area. Exactly what he's learned, I don't know. It's not-- you have to look at each of these projects to understand what. But you can see in the diagrams, there are tendencies to reproduce the length of facades and so on.

What he argues is that here are a set of different interpretations of a similar set of instructions. They all describe a variety of outcomes based on the same agreements, meta-agreements. In the little diagram, which I handed out to you by student, extending the physical structure of a small town in Ladakh, in northern India, he does these exercises with students, in which you start off with a basic theme.

The theme is what the culture is already reproducing. You understand the variations that are possible on that theme, what agreements have to be made to extend the items in different ways, what becomes private, what becomes public, what is negotiated, and so on. And it sets up a pattern which can grow over time with new agreements made for the use of roofs as the density grows and so on.

There are two problems with Habraken's work. One, again, it is essentially apolitical. I don't mean politics in the Democratic Party versus Republican Party sense. I meant in the notion that all agreements turn out to be responsible outcomes. I don't know what-- Habraken is using a methodology which distinguishes the existing form of Amsterdam from the new extension of Amsterdam by modern architects. Habraken claims that it's the modern architects who have lost all of the understanding of what agreements are.

He doesn't specify what bad agreements are. Habraken doesn't do this on Long Island, where there may be waste space, buildings in the middle of sites with open space around them. These are all dense, built-together systems, much like the original plans and the early expansions of the city of Amsterdam. So I don't know what-- I can't explain the strategy.

The strategy is that, again, like Alexander, you learn from what exists. You use your discerning capacity to build on what exists. You don't-- in Alexander's case, when he did Oregon experiment, he said, we will not build individual large buildings all by themselves. In the program, for every large building of classrooms, you need 10% of shops. You need 5% of open space. You need 20% of housing. All of these patterns are breaking down programs, which are large and mononuclear, into complex patterns and repeated in small parts, in small spatial entities.

These people have-- John Habraken has gone quite far in developing technologies for user situations in support systems. But both Alexander and Habraken's notions are intellectually very responsible. They are conservative. I don't know what you do when you build a new town. You don't have any infrastructure to build a contrapuntal system around. And I'm sure that that can be resolved by assuming a set of agreements early on, based on some ingredients from the broader culture of the place and so on.

We've got a few minutes to touch on a different set of stories. Billy Hillier and Julienne Hanson wrote a book called *The Social Logic of Space* in which they argued, essentially, that the spatial pattern which surrounds us affects us. They argued a lot against the notion of architectural determinism, which argues that architecture determines our lives. They showed that only under certain conditions does the spatial pattern really have effects.

The space syntax-- syntax is a word from linguistics. It refers to the proper order of words in a sentence in order for it to make sense. In some languages, the verb precedes the noun-- I eat a fish. In other languages-- I, the fish, eat. Each has a syntax which makes sense. And linguists can probably explain the reasons why one system works and the other doesn't work.

The work that has been known as space syntax really is more recent. It's the work which is published in this book, *Space is the Machine,* which is an extensive document. And if any of you are interested in this idea, you should probably try to read parts of it. Essentially, the argument is that behavior-- that you need to understand the space of the city before you can understand any of its elements.

The space of the city, in the application of this space syntax model, is a theory based upon movement patterns. Crudely speaking, they say that the movement pattern in a city is a function of the pattern that is shaped in order to cause the movement or that allows the movement to take place. So in a town which has space for movement, they can distinguish in what they call high correlation, which is the number of connections that are possible with a minimum number of separate moves. And low correlation represents a change of pattern which involves the maximum number of moves.

I'm putting it rather crudely. By this, you can characterize the layout of a town in terms of this capacity of movement to flow. They were correlating encounter rates with a space syntax methodology. In other words, if you wish to create a system in which there are random encounter acts, it was not only a function of density. It's a function, also, of pattern.

And it's also-- although they're a little unclear about this, it's not so clearly a result of a particular land use pattern. If Marlene Dietrich was singing tonight in east Boston, I might go to east Boston. I wouldn't normally go to east Boston.

AUDIENCE: [LAUGHS]

JULIAN BEINART: But then the argument would be that Marlene Dietrich would sing in a space which is easily available to me. Andres Sevtsuk, who did his PhD here two years ago, has taken some elements of the space syntax model and correlated it with patterns of movement and commercial location in Cambridge. It's a branching off of space syntax. It's not really space syntax because it doesn't develop theoretical models. He just bases it on observation, a very fine, detailed observation.

The value of space syntax, presumably, is in its correlation with social good dimensions. So for instance, the analysis of spatial patterns would suggest that crime rates are much lower where there is a high encounter rate, so that housing estates which turn their backs on to conventional streets and have their access from private, unguarded domains in the center, are much more likely to be available for burglary and others. And this correlates.

Their work is expanded enormously. They have now have computer programs which you can buy and play yourself. They consult all over the world. I have shown you one of the little projects in one drawing. That's the Trafalgar Square problem. Now, you can say that everything that they've built as a theoretical model and what they've actually found on the ground is something that you, as an intelligent observer, could have told. There's something obvious about what this enormous investment of energy and mind produces.

I was always told when I studied-- there's an class in urban sociology at Yale-- that I should understand that sociology is about everyday things and that you shouldn't be surprised if sociological conclusions accompany everyday observation. I don't know. It's a question which critics of space syntax have been very frequent to say, why waste the money on something which produces nothing new and just confirms what you can intuitively know? If there are obstacles to where people can walk, people won't walk there-- to reduce it to a rather, sort of base level.

It had a-- what do you think of the presentation you heard?

STUDENT: The one thing that I thought was interesting was, towards the end, he was proposing they were going to-- if you were to redevelop over the train yards in London. And he showed if you just put a grid down where the potential commercial streets would be, because they color-map the streets.

JULIAN BEINART: Sure, sure.

STUDENT: And he said, but if you did this pattern, then you can see, oh, this, according to him, would probably make a really good commercial street. And these would be residential. It's sort of a way to quantitatively understand non-grid patterns in a way that you could present to a planning board or a government.

JULIAN BEINART: Yeah.

STUDENT: It was interesting.

JULIAN BEINART: Yeah, the adjustments to the King's Cross site plan were interesting. I think a couple of things. Number one, it satisfies me when somebody methodologically shows that the form of things has meaning, has value. If you think that high encounter rates are a good thing, at least they will tell you how to accomplish it. And that's not a bad set of propositions.

We understand, actually, very little about high encounter rates. We assume them to be good. And Manhattan has had a history of, since its early days, making sure that sidewalks on its major avenues are wide enough to take a lot of people. Tokyo hasn't. The sidewalks are too narrow for the pedestrian volume. And one could imagine that the encounter rates-- the difficulty about encounter rates is that, often, people use them to believe that that is good. Richard Sennett, I think, naively believes that it's good for public relations.

When I walk down Fifth Avenue, I don't stop and talk to a woman with a fur and a dog. I'd probably be shot or be accused of-- you know. Crowds are not naturally places which enable-- often, they don't enable human communication. So encounter rates are, in themselves, not absolute good or absolute bad.

But certainly, the notion that you feel-- when do you feel safer? In all cultures, when you are on streets with a lot of other people-- I can imagine. I've been in places where I've been shit-scared of being on the street with a lot of other people because they all look like criminals to me, because I couldn't read the situation well enough.

The last set of stuff has a body of literature. And I've only chosen one page from one of the documents. There's a good book called *Urban Space and Structures,* which those of you serious about becoming urban designers need to read. It's edited by Leslie Martin and Lionel March, Cambridge University Press, 1972.

The British have been interested in understanding spatial patterns largely through geometry. In the piece that I've given to you today, on the right-hand side is a section of the grid of New York from 42nd to 52nd and from Eighth Avenue to Park Avenue. The argument is relatively simple.

If you took the amount of gross square footage built on this parcel in the black areas today, and you took away a number of the streets-- he took away every second street, more or less-- you could rebuild the same amount of square footage in the pattern on the right with only a maximum height of seven floors and large amounts of open space inside. Now, no architecture student I know of would come to that conclusion automatically. It's much like the use of the Fresnel lens in arguing population in a city.

As you go outwards, if you want the same area of land, as you get further out, these bands need to become thinner because the area they cover is larger. So the total population in the center of the city can be housed in a thin band on the outside. This is not-- there's a diminishing amount of width required in each band as you go further out because the band becomes larger. It's a simple geometric observation which they apply to some estimates about urban population.

The number of books published-- I will come back to the work of this group when we talk about prediction of growth and flexibility of building apparatus. A lot of this work came from a set of investigations that the British did at the end of the '39-'46 war in the rebuilding of British infrastructure-- hospitals, universities, and so on. I will do a series of case studies of a number of university plans showing two factors-- one, the idea that new groups of knowledge disciplines cohered-- microbiology as opposed to microphysics, biology and chemistry mixing together, and so on-- how these patterns could be accommodated in physical form which required the least adjustment over time.

We will look at the Technical University in Berlin. We will look at MIT as examples of these patterns which maintain-- which promote high degrees of flexibility. Also, in the British writing about hospitals, the research done in hospitals. Knowing that hospitals change hospital science and the administration changes rapidly, how would you choose patterns which enabled the minimum disruption in the trajectory of change?

So if any of you are interested in this kind of work, this is not the class to take. I can just tell you. We'll touch on some of this later on. But I can just read you some of the list of books this comes from. There's Philip Steadman's book called *Architectural Morphology.* There's Philip Steadman's book *The Evolution of Design.* There's Lionel March and Philip Steadman's book *The Geometry of Environment,* MIT Press, 1974.

There's a couple of the more generally applied outcomes of much of this work. We've finished the first part of the three sections of this class. This first part was just an attempt to bring you up to speed on some things which you might not have known about. We start the serious work on-- what is today? Tuesday. We start the serious work on Thursday.

We will start excavating the spatial pattern of existing cities after the Industrial Revolution. We'll, on Thursday, try to make sense of what industrialism meant, what it meant to spatial patterns in cities, what it meant to the invention of new instruments-- the mortgage system, deficit spending, and so on, the advent of poverty in accumulated situations in the West, and so on. And from that, we will make case studies of the major reactions-- London, Paris, Vienna, Barcelona, and Chicago. This is a comprehensive look at some very detailed aspects of existing transformations.

Hopefully, by the time we get to the end of the class, we'll be able to make theoretical generalizations better than the ones I've explained to you so far. Don't be too depressed. The remarkable thing is that we are building cities. We build them, perhaps, not as well spatially as we did 150 years ago or 300 years ago. But there's no more cholera because of the great invention in 1854 in London, causing the biggest transformation of London by siphoning off wastewater on the east and west sides, north and south of London.

All of this will build up a story about the complexity of actual urban situations, which I believe is better than too much time spending on abstract models. I don't know if we'll ever have a theory of city form which is universally agreed upon, able to be systematized. Some aspects of the performance of this field, which are moving more and more in this direction-- we certainly know more about public transportation and its engineering and science than ever before. We know very little about meaning.

We build pickle-shaped tall buildings in London without even being able to measure the effect. And there are parts of the world which are looking to manifest urban identity without building the tallest building in the world, and a number of issues of that kind which are currently on the plate of urban designers. OK. I'll see you on Thursday. Have a good holiday.